

# VOLUNTARY SEARCH FEEDBACK

Art Unit

App./Serial #

## **Relevant prior art found**

- 102 rejection
- 103 rejection
- Cited as being of interest
- Helped better understand invention
- Helped better understand state of the art in technology

Types  Foreign Patent(s)  Non-Patent Literature

## **Relevant prior art not found**

- Results verified the lack of relevant prior art (helped determine patentability).
- Results were not useful in determining the patentability or understanding of the invention.

## **COMMENTS**

Questions about the scope or the results of the search?

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L47 ANSWER 1 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
AN 2006-018122 [02] WPIX  
DNC C2006-096417 [31]  
DNN N2006-251112 [31]  
TI Encapsulated **particle** used as **controlled-release fertilizer**, comprises polyurethane layer disposed about core **particle** and comprising reaction product of **isocyanate** component and aromatic amine-based initiator-derived **polyol**  
DC A25; A97; C04; P73  
IN MENTE D C; MENTE D  
PA (BADI-C) BASF CORP; (MENT-I) MENTE D C  
CYC 110  
PIA US 20050266245 A1 20051201 (200602)\* EN 7[0]  
WO 2005118509 A1 20051215 (200602) EN  
EP 1768940 A1 20070404 (200726) EN  
KR 2007019740 A 20070215 (200755) KO  
CN 1956938 A 20070502 (200760) ZH  
MX 2006013643 A1 20070401 (200777) ES  
JP 2008500254 W 20080110 (200806) JA 17  
BR 2005011539 A 20080102 (200808) PT  
ADT US 20050266245 A1 US 2004-853826 20040526; CN 1956938 A CN 2005-80016863  
20050511; EP 1768940 A1 EP 2005-742831 20050511; WO 2005118509 A1 WC  
2005-EP5066 20050511; EP 1768940 A1 WO 2005-EP5066 20050511; KR 2007019740  
A WO 2005-EP5066 20050511; MX 2006013643 A1 WO 2005-EP5066 20050511; JP  
2008500254 W WO 2005-EP5066 20050511; KR 2007019740 A KR 2006-724477  
20061122; MX 2006013643 A1 MX 2006-13643 20061124; JP 2008500254 W JP  
2007-513736 20050511; BR 2005011539 A BR 2005-11539 20050511; BR  
2005011539 A WO 2005-EP5066 20050511

FDT EP 1768940 A1 Based on WO 2005118509 A; KR 2007019740 A Based on WO 2005118509 A; MX 2006013643 A1 Based on WO 2005118509 A; JP 2008500254 W Based on WO 2005118509 A; BR 2005011539 A Based on WO 2005118509 A

PRAI US 2004-853826 20040526

AB US 20050266245 A1 UPAB: 20060405

NOVELTY - An encapsulated **particle** comprises a core **particle** and a polyurethane layer, disposed about the core **particle**, that comprises the reaction product of an **isocyanate** component and a **polyol** derived from an aromatic amine-based initiator.

USE - The encapsulated **particle** is used as a **controlled-release fertilizer**.

ADVANTAGE - The aromaticity of the aromatic **isocyanate** component and the **polyol** serves to insure complete miscibility between the aromatic **isocyanate** and the **polyol** to form the polyurethane layer without defects preventing water from permeating the polyurethane layer and dissolving the core **particle**. The uniform, complete and defect-free polyurethane layer disposed about the core **particle** allows for slow, **controlled** dissolution of the core **particle** in the soil and alleviates a need for a second layer to be disposed about the polyurethane layer to cover any defects in the polyurethane layer. Because there are no defects in the polyurethane layer disposed about the core **particle**, water and other liquids cannot permeate the polyurethane layer and rapidly dissolve the core **particle**, thus preventing phytotoxicity.

TECH

AGRICULTURE - Preferred Materials: The core **particle** comprises **fertilizer**, preferably nitrogen, phosphate, potash, and/or sulfur.

INORGANIC CHEMISTRY - Preferred Material: The polyurethane layer comprises a pigment for coloring the polyurethane layer.

ORGANIC CHEMISTRY - Preferred Compound: The aromatic amine-based initiator comprises the formula (I).

R1 = alkyl, amine or H; and .

R2-R6 = amine or H.

Preferably, the initiator comprises a toluene diamine, particularly 2,3-toluene diamine. The **isocyanate** component comprises an aromatic **isocyanate** component, preferably methylene diphenyl **diisocyanate** or toluene **diisocyanate**. The **polyol** is derived from a dipropylene glycol initiator in addition to the aromatic amine-based initiator.

Preferred Properties: The **isocyanate** component has a viscosity of 20-700 cP at 25degreesC, a nominal functionality of 1.5-4, and an **isocyanate** (NCO) content of 25-40%. The **polyol** has a viscosity of 5000-17000 cP at 25degreesC, a nominal functionality of 2-6, and a hydroxyl (OH) number of 350-500.

ABEX EXAMPLE - Encapsulated **particles** were prepared in beakers.

Specifically, 4 g of Pluracol Polyol 824 (RTM: a **polyol** derived from an aromatic amine-based initiator) was heated to 90degreesC and added dropwise to a beaker containing 100 g of commercial urea spheres to form a **polyol**-urea mixture. To the mixture was added 5 g of Lupranate M20S (RTM: an aromatic **isocyanate**), preheated to 90degreesC, and the mixture manually swirled to ensure complete contact between the commercial urea spheres and the reaction product of the **polyol** derived from an aromatic amine-based initiator and the aromatic **isocyanate**. The complete contact resulted in a polyurethane layer disposed about the commercial urea spheres. The commercial urea spheres were subsequently stirred with a foam mix blade to minimize agglomeration resulting in a free flowing group of commercial urea spheres. - Comparative examples were carried out as above except that

Comparative Example 1 utilized an aromatic **isocyanate** and a non-aromatic **polyol** that included castor oil. Similarly, Comparative Example 2 utilized an aromatic **isocyanate** and Pluracol **Polyol GP430** (RTM; a non-aromatic **polyol** that included glycerine). - The miscibility of **isocyanate** and **polyol** was rated as 'Complete' for Example 1, 'Partial' for Comparative Example 1 and 'None' for Comparative Example 2. Dissolution time of core **particle** was more than 1 day for all 3 examples. Cure time of polyurethane layer was 5 minutes for Example 1, 1 hour for Comparative Example 1 and 4 hours for Comparative Example 2. - In comparative example 1, the polyurethane layer that was disposed about the core **particle** included defects and allowed water and other liquids to permeate the polyurethane layer and rapidly dissolve the core **particle**. Additionally, the immiscibility of the castor oil and the aromatic **isocyanate** greatly increased cure time of the polyurethane layer. Similarly, Comparative Example 2 also utilized an aromatic **isocyanate** and a non-aromatic **polyol** that was not completely miscible with the aromatic **isocyanate** and also resulted in a polyurethane layer that included defects. Additionally, the partial miscibility of the aromatic **isocyanate** and the nonaromatic **polyol** increased the cure time of the polyurethane layer.

L47 ANSWER 2 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 2005-283846 [29] WPIX  
 DNC C2006-128153 [42]  
 TI **Coating of fertilizer particles** to impart to them **slow plant nutrient release**, comprises simultaneously spraying preheated **particles** with **isocyanate pre-polymer** and reacting combination fluid  
 DC A97; C04; G02  
 IN WHITTINGTON A A  
 PA (WHIT-I) WHITTINGTON A A  
 CYC 1  
 PIA US 20050076687 A1 20050414 (200529)\* EN 9[2] --  
 ADT US 20050076687 A1 US 2003-682347 20031010  
 PRAI US 2003-682347 20031010  
 AB US 20050076687 A1 UPAB: 20051222  
 NOVELTY - **Fertilizer particles** are coated to impart to them **slow plant nutrient release** by simultaneously spraying the preheated **particles** with an **isocyanate pre-polymer** and reacting combination fluid having **polyol, methyl ester** derivative of a **plant or vegetable oil**, **polymerization catalyst**, and **powder extender**.  
 DETAILED DESCRIPTION - **Coating of fertilizer particles** to impart to them **slow plant nutrient release** comprises preheating to 125 degrees F and drying the **fertilizer particles**; simultaneously spraying the preheated **particles** with an **isocyanate pre-polymer** and reacting combination fluid having **polyol, methyl ester** derivative of a **plant or vegetable oil**, **polymerization catalyst**, and **powder extender**; reacting the **isocyanate pre-polymer** and reacting combination fluid to form a **polymer coating** on the **fertilizer particles**; and cooling the **coated fertilizer particles** to form a **slow release fertilizer** product.  
 An INDEPENDENT CLAIM is also included for a **coating apparatus** (10) for **coating fertilizer**

particles or pellets with a **slow-release** **polymer** comprising **particle** or **pellet fertilizer** preheater and drier (12); rotating **particle** or **pellet fertilizer** **coating** drum (14); mechanism for conveying preheated and dried **fertilizer particles** or pellets from the preheater and drier to the **coating** drum having a **fertilizer particle** or **pellet** entrance (24) end and product **coated fertilizer** exit (26) end; product **coated fertilizer** cooler (16) and retainer; and mechanism for collecting and conveying product **coated fertilizer** **particles** or pellets from the rotating **coating** drum to the product **coated fertilizer** cooler and retainer. The rotating **coating** drum has source for **isocyanate pre-polymer**, source for reacting combined fluid, central axis, axially located center beam **coating** station support (40), **coating** stages (30) spaced along the center beam, mechanism for directing the **isocyanate pre-polymer** from the source of **isocyanate pre-polymer** to each of the stages, mechanism for directing the reacting combined fluid from the source of combined fluid to each of the stages, nozzle connected with the mechanism for directing **isocyanate pre-polymer** and located at each the stage, and corresponding nozzle connected with the mechanism for directing reacting combined fluid and located at each the stage. The nozzle is directed for discharge of **isocyanate pre-polymer** toward the **fertilizer particles** or pellets. The **isocyanate** monomer directing nozzle and the corresponding combined fluid nozzle are located at the same position lengthwise relative to the center beam support at each of the stages. The **coated fertilizer** product cooler and retainer is receiving hot product from the **coating** drum and cooling the product to ambient temperature.

**ACTIVITY - Fertilizer.**

**MECHANISM OF ACTION -** None given.

**USE -** The invention is for **coating fertilizer** **particles** to impart to them **slow plant nutrient release** to provide high quality fully **coated fertilizer** product.

**ADVANTAGE -** The invention provides a **coated fertilizer** product for **slow release** of **plant nutrients** that is highly abrasion resistant. It provides **coated fertilizer** product having bright brilliant colors, superior hydrophobic qualities, leaves no toxic residue in the soil, and avoids dust and odor during the application step. It reduces sticky buildup in the **coating** equipment.

**DESCRIPTION OF DRAWINGS -** The figure is a diagrammatic plan view of a **coating** apparatus for **coating fertilizer**.

**Coating** apparatus (10)  
Drier (12)  
Rotating **particle** or **pellet fertilizer** **coating** drum (14)  
Product **coated fertilizer** cooler (16)  
**Fertilizer particle** or **pellet** entrance (24)  
Product **coated fertilizer** exit (26)  
**Coating** stages (30)  
First tank (32)  
Second tank (36)  
First feed line (34)  
Second feed line (38)  
Axially located center beam **coating** station support (40)  
Storage bin (62)

TECH

MECHANICAL ENGINEERING - Preferred Component: The **fertilizer** preheater and drier is a rotating drum. The **coated fertilizer** product cooler and retainer is a rotating cooling and retention drum. The source for **isocyanate pre-polymer** source is a first tank (32) and feed line. The mechanism for directing **isocyanate prepolymer** from the source to each of the stages is a first header supported with the center beam and fluidly connecting the first feed line (34) and the first header. The source for reacting combined fluid is a second tank (36) and feed line, the and the mechanism for directing combined fluid from the source to each of the stages is a second header supported with the center beam and fluidly connecting the second feed line (38) and the second header. The second tank has mechanism for stirring the combined fluid held therein. The nozzle for discharge of **isocyanate** monomer comprises spray head for spraying **isocyanate** monomer toward the **fertilizer particles** or pellets. The corresponding nozzle for discharge of combined fluid comprises a spray head for spraying combined fluid toward the **fertilizer particles** or pellets to form a **coating** stage in the rotating **coating** drum. There are four **coating** stages formed in the rotating **coating** drum each having an **isocyanate pre-polymer** spray head and a corresponding combined fluid spray head. The **coating** drum has a pitch of 15 degrees downward from the **fertilizer particle** or pellet entrance end and the **coated** product exit end. The **fertilizer particles** or pellets are moving through each **coating** stage as they travel between the entrance end and the exit end. The **coating** apparatus further includes storage bin (62), and collecting conveyer located between the cooling and detention drum. The storage bin is for collecting cooled **coated fertilizer** product from the cooling and detention drum and conveying the cooled **coated fertilizer** product to the storage bin for storage.

INORGANIC CHEMISTRY - Preferred Component: The **powder** extender in the reacting combination fluid comprises **barium sulfate**. The **fertilizer particles** are from **granules**, **chunky granules**, **prills**, **pellets**, **extrusion**, **shot**, **lumps**, **grains**, **crystals**, or **flakes**. They consist sulfate-based **fertilizers**, preferably potassium sulfate.

POLYMERS - Preferred Component: The combination fluid further comprises an **oil-based dye**, **micronutrients** from **copper** compounds or **zinc** compounds, and **pesticides**. The **isocyanate pre-polymer** is from diphenylmethane **diisocyanate**, **toluene diisocyanate**, or **polymeric diphenylmethane diisocyanate**. The **polyol** is from **Polyester polyol**, **Polyether polyol**, or **Polyethylene glycol**. The **Polymerization catalyst** is from **dibutyl tin dilaurate**, **triethylene diamine**, or **methyl diethanolamine**. The **methyl esters** of **plant** or **vegetable oils** are from **methyl esters** of **cottonseed oil**, **linseed oil**, or **soybean oil**. The combined fluid further comprises **plant** or **vegetable oils** from **cottonseed oil**, **linseed oil**, **waxes** from **paraffin** and **microcrystalline waxes**, or **powders** from **diatomaceous earth**, **calcium carbonate**, **clays**, or **silicas**.

Preferred Concentration: There are 6g of a **pre-polymer** and reacting combination fluid having 3g **Polyether polyol**, 3g

**soy bean oil methyl ester,**  
**1/4g dibutyl tin dilaurate catalyst, and 3g**  
**barium sulfate applied through spraying for each pound**  
**of fertilizer particles coated.**

Preferred Process: The spraying step and reacting steps are repeated a number of times corresponding to the number of layers of **coating** desired on the **fertilizer particles**. They are successively carried out in stages as the **fertilizer particles** travels through a multi-stage **coating** drum resulting in **fertilizer particles** having four **coatings**. There are four spraying and reacting steps carried out in four stages.

L47 ANSWER 3 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 2005-083381 [10] WPIX

DNC C2005-029093 [10]

TI **Coated granular fertilizer** for slow release in paddy field, comprises **granular fertilizer** coated with polyurethane film, obtained by reacting polyester **polyol** containing hardened castor oil and/or castor oil with **polyisocyanate**

DC A97; C04

PA (SUMO-C) SUMITOMO CHEM CO LTD

CYC 1

PIA JP 2005001957 A 20050106 (200510)\* JA 8[0]

ADT JP 2005001957 A JP 2003-168921 20030613

PRAI JP 2003-168921 20030613

AB JP 2005001957 A UPAB: 20050708

NOVELTY - **Coated granular fertilizer** comprising **granular fertilizer** coated with polyurethane film, obtained by reacting polyester **polyol** component (PEPC) and **polyisocyanate** component (PIC), is new.

DETAILED DESCRIPTION - **Coated granular fertilizer** comprises **granular fertilizer** coated with polyurethane film, obtained by reacting polyester **polyol** component (PEPC) and **polyisocyanate** component (PIC). PEPC contains hardened castor oil (HCO) and/or castor oil (CO). The ratio of HCO with respect to sum total of HCO and CO is 20 weight% or more. The equivalence ratio between NCO group of PIC and hydroxyl group of PEPC is 0.9-1.2.

An INDEPENDENT CLAIM is also included for manufacture of **coated granular fertilizer** having polyurethane film, which involves providing **granular fertilizer** in fluid or rolling state, adding mixture of hardened castor oil and/or castor oil, **polyisocyanate** and catalyst, mixing, maintaining fluid or rolling state and hardening the mixture on the **granular fertilizer**.

ACTIVITY - **Fertilizer**. No biological data given.

MECHANISM OF ACTION - None given.

USE - The **coated granular fertilizer** is used as naturally disintegrating **slow release** **coated granular fertilizer** used in paddy field.

ADVANTAGE - The **coated granular fertilizer** has natural disintegration property, and exhibits favorable elution retardency of **fertilizer** component. The **slow release coated granular fertilizer** can be easily manufactured industrially.

TECH

ORGANIC CHEMISTRY - Preferred Process: Catalyst and polyester

**polyol** component are mixed. The mixture is mixed with **polyisocyanate** component, and the reaction between polyester **polyol** component and **polyisocyanate** component is performed. Mixture having equivalence ratio of 0.9-1.2 between CNO group of **polyisocyanate** component with respect to OH group of hardened castor oil and/or castor oil, is mixed with primary preparation (obtained by mixing hardened castor oil and/or castor oil, with catalyst). Preferred Amount: The coating quantity of polyurethane film with respect to **granular fertilizer** is 6-16 wt.%.

ABEX EXAMPLE - **Granular** urea having average **particle** diameter of 3.1 mm (5 kg) was rotated at 20-30 rpm. Non-hardened urethane resin was obtained by mixing hardened castor oil having hydroxyl value of 156 mg/g (18.1 g) dissolved in 2,4,6-tris(dimethyl aminomethyl)phenol (0.2 g) homogenous mixture at 90 degrees centigrade with **polymeric** diphenyl methane **diisocyanate** (6.8 g) at room temperature. The non-hardened urethane resin was rapidly added to the **granular** urea maintained in rolling state, at 70 degrees centigrade. Non-hardened urethane resin was liquefied during mixing and addition. The gelling time of non-hardened urethane resin was 2 minutes and 30 seconds, at 70 degrees centigrade. The supplied amount of non-hardened urethane resin was 0.5 wt.% with respect to **fertilizer** preparation. When the **granular fertilizer** was **coated**, the film thickness of the **coated** urethane resin was set to 3.1 micrometer. Visual observation showed that the **granular fertilizer** was substantially uniformly **coated** with non-hardened urethane resin within 30 seconds. Urethane resin **coating** process was repeated 15 times, each 3 minutes. Coating (8 wt.%) was provided to **granular fertilizer**. Then, maintained at 73 degrees centigrade for 3 minutes and the resin was completely cured to obtain **coated granular fertilizer**. The **coated granular fertilizer** (7.5 g) was added to sample bottle, water (100 ml) was added and kept at 25 degrees centigrade. Water (0.5 ml) was taken from the bottle after predetermined time and urea concentration was measured. The elution proportion of urea was calculated from the measured urea concentration. The elution proportion of urea was found to be 0 %, 13 %, 27 %, 31 %, 55 %, 70 % and 81 % after 0, 10, 20, 30, 40, 50, 60 and 70 days.

L47 ANSWER 4 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 2004-065153 [07] WPIX  
 DNC C2005-239098 [80]  
 DNN N2005-643850 [80]  
 TI **Coated** biological active substance for cultivating crops, is obtained by **coating** biological active substance with polyurethane, which is obtained by reacting **polyols** having preset hydroxy equivalents with **isocyanate**  
 DC A25; A97; C04; P13  
 IN UCHINO M  
 PA (CHCC-C) CHISSO CORP  
 CYC 1  
 PIA JP 2003183104 A 20030703 (200407)\* JA 7[0] <--  
 ADT JP 2003183104 A JP 2001-388247 20011220  
 PRAI JP 2001-388247 20011220  
 AB JP 2003183104 A UPAB: 20060203  
 NOVELTY - A **coated** biological active substance is obtained by **coating** biological active substance with polyurethane. The polyurethane is obtained by reacting **polyol** having hydroxy equivalent of 120 or less and **polyol** having hydroxy equivalent of 150 or more with **isocyanate**.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) biological active substance composition, containing the **coated** biological active substance; and  
 (2) cultivation of crops, which involves using the above composition.

ACTIVITY - **Fertilizer**.

No biological data is given.

MECHANISM OF ACTION - None given.

USE - As agrochemical or **fertilizer** for cultivating crops (claimed), such as edible crops e.g. rice, fodder crops e.g. bean family **plants**, spice crops e.g. pepper, oil crops e.g. sesame, sugar crops e.g. sugar beet and fiber crops e.g. cotton.

ADVANTAGE - The **coated** biological active substance exhibits controlled/favorable dissolution and elution pattern. The substance effectively promotes **growth** of agricultural products and useful **plants** without generating **growth** failure.

The substance improves the yield and quality of agricultural products. The substance has excellent disease preventing effect, insect-pest preventing effect and weed preventing effect.

TECH

AGRICULTURE - Preferred Substance: The biological active substance is an agrochemical or **fertilizer**.

ORGANIC CHEMISTRY - Preferred Amount: The amount of **polyol** having hydroxy equivalent of 120 or less is 5-90 wt.%.

ABEX EXAMPLE - 70% pure 1-(6-chloro-3-pyridyl methyl)-N-nitro imidazolidine-2-ylidene amine (agrochemical) (3 wt.pts.), bentonites (65 wt.pts.), clay (31 wt.pts.) and sodium lignisulfonate (1 wt.pt), were knead-mixed uniformly, **granulated** and dried to obtain agrochemical **granules**. Dried **granules** (3.4 mm mean **particle** diameter) (920 g) were **coated** using film forming material containing propylene glycol (having hydroxy equivalent of 38) (7 g), polypropylene glycol (hydroxy equivalent of 350) (35 g) and **polymeric** diphenyl methane **diisocyanate** (MDI) (38 g) in the presence of an amine catalyst at 65-75 degreesC for 40 minutes, to obtain a **coated** biological active substance (CBA), having excellent insecticidal effect. The CBA when mixed with rice **plant** seeds and irrigated for 20 days at 18-28 degreesC, promoted the **growth** of rice **plant** remarkably.

L47	ANSWER 5 OF 22	WPIX COPYRIGHT 2008	THE THOMSON CORP on STN	
AN	2003-636508 [60]	WPIX		
DNC	C2003-173902 [60]			
TI	Coated granules used for <b>fertilizers</b> , insecticides, <b>plant</b> protection agents, fungicides and drying agents include <b>coating</b> of resin comprising reaction product of cardol or cardanol with <b>isocyanate</b>			
DC	A21; A25; A97; C04; C07			
IN	KUHLMANN P; PRIEBE C; WINTER R			
FA	(ASHL-N) ASHLAND-SUEDCHEMIE-KERNFEST GMBH; (KUHL-I) KUHLMANN P; (PRIE-I) PRIEBE C; (WINT-I) WINTER R			
CYC	99			
PIA	WO 2003048075	A1 20030612 (200360)*	DE 17[0]	<--
	DE 10158693	A1 20030626 (200360)	DE	<--
	AU 2002351700	A1 20030617 (200419)	EN	<--
	EP 1451129	A1 20040901 (200457)	DE	
	DE 10295611	T 20041014 (200468)	DE	
	BR 2002014523	A 20041103 (200482)	PT	
	US 20050005661	A1 20050113 (200506)	EN	
	JP 2005511465	W 20050428 (200530)	JA 16	

EP 1451129 B1 20050713 (200547) DE  
 DE 50203642 G 20050818 (200557) DE  
 ES 2242079 T3 20051101 (200577) ES  
 MX 2004005102 A1 20050701 (200628) ES  
 AU 2002351700 B2 20070913 (200801) EN  
 ADT WO 2003048075 A1 WO 2002-DE4352 20021127; DE 10158693 A1 DE  
 2001-10158693 20011129; AU 2002351700 A1 AU 2002-351700  
 20021127; BR 2002014523 A BR 2002-14523 20021127; DE  
 10295611 T DE 2002-10295611 20021127; DE 50203642 G DE  
 2002-503642 20021127; EP 1451129 A1 EP 2002-787406 20021127  
 ; EP 1451129 B1 EP 2002-787406 20021127; DE 50203642 G EP  
 2002-787406 20021127; ES 2242079 T3 EP 2002-787406 20021127  
 ; EP 1451129 A1 WO 2002-DE4352 20021127; DE 10295611 T WO  
 2002-DE4352 20021127; BR 2002014523 A WO 2002-DE435 20021127  
 ; US 20050005661 A1 WO 2002-DE4352 20021127; JP 2005511465 W  
 WO 2002-DE4352 20021127; EP 1451129 B1 WO 2002-DE4352  
 20021127; DE 50203642 G WO 2002-DE4352 20021127; MX  
 2004005102 A1 WO 2002-DE4352 20021127; JP 2005511465 W JP  
 2003-549270 20021127; MX 2004005102 A1 MX 2004-5102 20040527; US  
 20050005661 A1 US 2004-497196 20040527; AU 2002351700 B2 AU  
 2002-351700 20021127  
 FDT DE 50203642 G Based on EP 1451129 A; ES 2242079 T3 Based on  
 EP 1451129 A; AU 2002351700 A1 Based on WO 2003048075 A; EP  
 1451129 A1 Based on WO 2003048075 A; DE 10295611 T Based on WO  
 2003048075 A; BR 2002014523 A Based on WO 2003048075 A; JP  
 2005511465 W Based on WO 2003048075 A; EP 1451129 B1 Based on WO  
 2003048075 A; DE 50203642 G Based on WO 2003048075 A; MX  
 2004005102 A1 Based on WO 2003048075 A; AU 2002351700 B2 Based on WO  
 2003048075 A  
 PRAI DE 2001-10158693 20011129  
 AB WO 2003048075 A1 UPAB: 20060202  

NOVELTY - **Coated granules** include a **coating** of a resin comprising the reaction product of cardol, cardanol, their derivatives and/or oligomers with an **isocyanate** component, and the resin is applied in a very thin layer.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for preparation of the **coated granules** which comprises:

- (a) preparation of the **granular** material;
- (b) preparation of a **polyol** component including cardol, cardanol, their oligomers and/or derivatives and an **isocyanate** component;
- (c) mixing the **polyol** and **isocyanate** components;
- (d) adding the mixture from step (c) or the **polyol** component and the **isocyanate** component as a single entity to the prepared **granular** substance to deposit a **coating** mixture on the **granular** material;
- (e) hardening the mixture from step (d), and
- (f) preferably repeating steps (d) and (e) to deposit the **coating** mixture on the **granular** material in a number of cycles, e.g. 2-10 cycles.

USE - Useful for **fertilizers**, insecticides, plant protection agents, fungicides and/or drying agents.

ADVANTAGE - The resin can be applied sparingly and specifically because of its low adhesion, and when applied to **fertilizers**, it enables more **nutrients** to be applied to the **plants**, over long periods and continuously, with reproducible release behavior.

TECH

**POLYMERS** - Preferred Components: The composition comprises a **coated granular** material (CGM) where the **polyol**

component is obtained by epoxidation, maleination, or hydrogenation of cardol or cardanol or by reaction of cardol and/or cardanol or by maleination, epoxidation, or hydrogenation of the compounds obtained with an aldehyde (sic). The **polyol** component after heating of cashew nut oil and distilling off the cardol and cardanol in the reaction sump (sic) is a residual oligomer. The **polyol** component includes an OH group containing plasticizer and/or an OH group containing diluting agent, and/or a phenol/aldehyde condensation product, and/or other conventional additives. The phenol/aldehyde condensation product comprises novolac or benzylether resin.

The resin **isocyanate** component is an aliphatic, aromatic or heterocyclic **isocyanate** with at least two **isocyanate** groups in a molecule or its oligomers or **polymers**, e.g. toluene **diisocyanate**, diphenylmethane **diisocyanate**, or an oligomer based on them.

Preferred Process: In step (e), an amine catalyst is used for hardening. AGRICULTURE - Preferred Components: The **coated granular** material (CGM) is water soluble. The CGM comprises **fertilizers**, **plant** protection agents, insecticides, pesticides, fungicides and/or drying agents. The CGM is an **NPK-fertilizer**. The amount of **coating** mixture is 3-15 wt.% based on the amount of CGM. The grain size of the CGM is 1-10 mm.

ABEX EXAMPLE - A **polymer** formulation contained (in g): **polymer** resin (25), castor oil (60), diethylene glycol (10) and molecular sieve (5). The **polymer** resin was obtained from phenol condensate obtained from paraformaldehyde, and **zinc** acetate in 85% yield.

L47 ANSWER 6 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STM

AN 2002-464714 [50] WPIX

DNC C2002-132340 [50]

DNN N2002-366284 [50]

TI Horticultural medium for plant **growth**, comprises hydrophilic **polyisocyanate-polyol-based polymer**, and filler material

DC A26; A32; A97; P13

IN FRISCH K C; HANN D G; SENDIJAREVIC V

PA (SMIT-N) SMITHERS OASIS CO

CYC 29

PIA EP 1192852 A2 20020403 (200250)\* EN 22[4] <--

CA 2356830 A1 20020402 (200250) EN <--

JP 2002165520 A 20020611 (200253) JA 11 <--

US 6479433 B1 20021112 (200278) EN <--

ADT EP 1192852 A2 EP 2001-121423 20010907; US 6479433 B1 US 2000-678870 20001002; CA 2356830 A1 CA 2001-2356830 20010910 ; JP 2002165520 A JP 2001-289074 20010921

PRAI US 2000-678870 20001002

AB EP 1192852 A2 UPAB: 20050902

NOVELTY - A horticultural medium comprises a hydrophilic **polyisocyanate-polyol-based polymer**, and a filler material (12).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(A) a method of making the above-mentioned horticultural **growing** medium comprising mixing a filler material with **polyisocyanate-polyol-based quasi-prepolymer**, forming a **quasi-prepolymer**/filler mixture (24); and applying water to the mixture;

(B) a method of **growing** plant seedlings comprising planting a seed or seedling in the above horticultural **growing** medium;

(C) a hydrophilic urethane **polymer** comprising the reaction product of quasi-**prepolymer** and water; and  
 (D) a method of making a hydrophilic polyurethane comprising adding a hydrophilic **polyol** to an **isocyanate**, mixing the **polyol** and **isocyanate** to form a quasi-**prepolymer**, and contacting the quasi **prepolymer** with water.

USE - For horticultural applications, i.e. as medium for plant growth.

ADVANTAGE - The invention displays flexibility, strength, and wetting characteristics.

DESCRIPTION OF DRAWINGS - The figure is a schematic view of a mixing apparatus for making horticultural **growing** medium.

Filler material (12)

Quasi-**prepolymer**/filler mixture (24)

Mold (30)

TECH

**POLYMERS** - Preferred Component: The hydrophilic **polyisocyanate-polyol-based polymer** is a reaction product of:

(a) **polymethylene polyphenylene polyisocyanate** having an average **cyanate** (NCO) functionality of 2-3 and a **polyol**;

(b) a reaction product of diphenylmethane **diisocyanate** and a polyether glycol; and

(c) reaction product of water and quasi-**prepolymer** having an NCO:OH equivalent weight ratio of 3:1-6:1.

The **polyol** consists of random **copolymers** and block **copolymers** or propylene oxide and ethylene oxide.

Preferred Medium: The **growing** medium is deposited to mold (30) and allowed to solidify to form a molded **growing** medium.

ABEX EXAMPLE - A quasi-**prepolymer** was synthesized by adding 580 g of **polyol** UCON 75H1400 to 251 g of **isocyanate** PAPI 2094. The mixture was mixed for 5-10 minutes without nitrogen and quasi-**prepolymer** was stored at 25degreesC. It had an NCO:OH equivalent weight ratio of 4:1. The viscosity (cPs) of the **prepolymer** was determined after 3-5 days. The NCO percentage of the **prepolymer** was determined by di-n-butyl amine titration. The viscosity at 3 days was 10100, at 5 days was 10700. The theoretical NCO% was 7.3, and the actual NCO% after 5 days was 6.9.

L47 ANSWER 7 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 2002-259660 [31] WPIX

DNC C2002-077323 [31]

TI Production of polyurethane encapsulated, **slow release** **fertilizer particles** involves sequentially applying **isocyanate-reactive** component comprising **oleo polyol**, and **polyisocyanate** component on **fertilizer** **particles**

DC A25; A97; C04

IN CLINE R L; MARKUSCH P H; SARPESHKAR A M  
 PA (FARB-C) BAYER CORP; (MILE-C) MILES LAB INC

CYC 30

PIA	EP 1172347	A2 20020116 (200231)*	EN 10[0]	<--
	CA 2352442	A1 20020111 (200231)	EN	<--
	US 6358296	B1 20020319 (200231)	EN	<--
	JP 2002114591	A 20020416 (200242)	JA 10	<--
	MX 2001006872	A1 20020801 (200366)	ES	<--
	MX 223483	B 20041013 (200557)	ES	<--

ADT EP 1172347 A2 EP 2001-114816 20010627; US 6358296 B1 US  
 2000-613680 20000711; CA 2352442 A1 CA 2001-2352442 20010705

; MX 2001006872 A1 **MX 2001-6872 20010705; MX 223483 B MX 2001-6872 20010705; JP 2002114591 A JP 2001-207716 20010709**

PRAI **US 2000-613680 20000711**

AB EP 1172347 A2 UPAB: 20060119

**NOVELTY** - Polyurethane encapsulated, **slow release** **fertilizer particles** are made by applying an **isocyanate-reactive** component on **fertilizer particles** to form **coated fertilizer particles**; and applying a **polyisocyanate** component on the **coated fertilizer particles** to form polyurethane encapsulated **fertilizer particles**. The **isocyanate-reactive** component comprises an **oleo polyol**.

**USE** - For producing polyurethane encapsulated, **slow release fertilizer particles**.

**ADVANTAGE** - The inventive method produces polyurethane encapsulated, **slow release fertilizer particles** that does not present any harm to the environment, and have superior **slow release** properties when compared to **castor oil** alone or when compared to **castor oils** which are chemically modified with methylol groups containing resins. The method provides encapsulation of the layers with high homogeneity.

TECH

**POLYMERS** - Preferred Composition: The polyurethane encapsulated **fertilizer particles** comprises 4-10, or 2-20 wt.% polyurethane based on the total weight of the encapsulated **fertilizer** composition.

Preferred Component: The **polyisocyanate** comprises a liquid **polymethylene poly(phenylisocyanate)** composition.

Preferred Property: The **oleo polyol** has a viscosity of less than 2000, preferably 1300 mPaasterisks; has an hydroxy (OH) number of 215; a molecular weight of 914; an equivalent weight of 261; and a functionality of 3.5.

Preferred Condition: The ratio of the **isocyanate** groups contained in the **polyisocyanate** to **isocyanate-reactive** groups contained in the **iso-cyanate** reactive component is 0.8:1-2.0:1, preferably 0.93:1-1.1:1.

Preferred Method: The steps are optionally repeated (successively) as many times as necessary, with the polyurethane encapsulated **fertilizer particles** being substituted for the **isocyanate-reactive** **coated fertilizer particles**, to form polyurethane encapsulated **fertilizer particles**.

**ORGANIC CHEMISTRY** - Preferred Component: The **oleo polyol** is derived from natural **oils** comprising **castor oil**, **soybean**, **sunflower** or **linseed oil** (preferably **castor oil**).

ABEX EXAMPLE - Encapsulated **fertilizer granules** were prepared comprising (g): urea pellets (100); Sovermol 815 (RTM: an **oleo** chemical **polyol** obtained by reacting an alcohol with an epoxidized **castor oil**, having an OH number of 215, a molecular weight of 914, an equivalent weight of 261, a functionality of 3.5, and a viscosity of 1,300 mPaasterisks) (1.36); a **polymethylene poly(phenylisocyanate)** (0.72); Dabco T-12 (RTM: a dibutyltin dilaurate catalyst) (0.0027). The polyurethane encapsulation was 5.16%. After 3 hours storage of the encapsulated **fertilizer granules**, 30.6% of the encapsulated urea was dissolved.

L47 ANSWER 8 OF 22 WPIX COPYRIGHT 2008

THE THOMSON CORP on STN

AN 2001-599814 [68] WPIX

DNC C2001-177420 [68]

TI **Coated granular fertilizer** comprises

specific amount of carnauba **wax** and polyurethane resin obtained by reaction of **oil** modified alkyl resin and diphenyl methane **diisocyanate** and/or tolylene **diisocyanate**

DC A25; A97; C04

IN MIKI S; NAGAOKA Y; OKADA T  
PA (TAKG-C) TAKI CHEM CO LTD

CYC 1

PIA JP 2001163691 A 20010619 (200168)\* JA 6[0]

<--

ADT JP 2001163691 A JP 1999-352529 19991213

PRAI JP 1999-352529 19991213

AB JP 2001163691 A WUPAB: 20050526

**NOVELTY - Coated granular fertilizer**

comprises carnauba **wax** (B) and polyurethane (PU) resin obtained by reaction of **oil** modified alkyd resin (A) and diphenyl methane **diisocyanate** and/or tolylene **diisocyanate** (C). The weight ratio of PU resin and carnauba **wax** ranges between 1:0.25-1:1.

**DETAILED DESCRIPTION** - An INDEPENDENT CLAIM is also included for manufacture of **coated granular fertilizer** which comprises spraying a mixture of (A) and (B), and (C) separately, to **fertilizer** grain and drying.

**USE** - For use as **fertilizers**.

**ADVANTAGE** - The **coated fertilizer** performs elusion accurately for prolonged time. Use of organic solvent is prevented, thereby avoiding damage due to fire. The manufacturing method is simple.

TECH

**ORGANIC CHEMISTRY** - Preferred Process: The components (A)-(C) are separately heat processed at the softening point of carnauba **wax** or above melting point of carnauba **wax** after spraying and drying processes. The spraying and drying processes are repeatedly performed more than 5 times.

ABEX **EXAMPLE - Granular** urea (500 g) having mean **particle** diameter of 3 mm was taken in a **coating** apparatus. Hot air was passed and the temperature was maintained at 70degreesC. Cobalt salt (0.2 g) of aliphatic monocarboxylic acid and potassium salt (0.4 g) of aliphatic monocarboxylic acid were added as catalyst, to **linseed oil**-castor **oil** modified alkyl resin (40 g). The solution was heated to form **polyol** solution. Carnauba **wax** was melted at 100degreesC and the **wax** (30 g) was taken. To the **granular** urea, **polyol** solution formed above was sprayed for 10 seconds at a rate of 0.08 g/second. Subsequently, molten carnauba **wax** was sprayed for 10 seconds at 0.08 g/second. The spray **coat** was dried for 5 minutes to form a film. The **coating** was repeated for 20 times and dried in air drier at 90degreesC for 1 hour. The coverage of **coated granular fertilizer** was found to be 8.8% and elusion amount after 10 days, 30 days, 50 days, 70 days and 90 days were found to be 1.5%, 5.2%, 36.2%, 72.4% and 89.5%, respectively.

L47 ANSWER 9 OF 22 WPIX COPYRIGHT 2008

THE THOMSON CORP on STN

AN 1996-353715 [35] WPIX

DNC C1996-111377 [35]

TI Attrition resistant, **controlled release** fertiliser

**particles** - comprise nutrient-containing core surrounded by organic **wax coating** and **coating** derived from reaction between **poly-isocyanate** and **polyol**

DC A17; A25; A97; C04

IN HUDSON A P; ROBINSON L; WOODWARD F E

PA (HUDS-I) HUDSON A P; (ROBI-I) ROBINSON L; (WOOD-I) WOODWARD F E

CYC 1  
 PIA US 5538531 A 19960723 (199635)\* EN 10[0] ---  
 ADT US 5538531 A CIP of US 1991-719975 19910624; US 5538531 A  
 US 1994-177910 19940106  
 PRAI US 1994-177910 19940106  
 US 1991-719975 19910624  
 AB US 5538531 A UPAB: 20050512  
 An attrition resistant, **controlled release** fertiliser  
 comprises a **coated** core of **particulate** fertiliser  
 containing a water soluble **plant nutrient**, one of the  
**coatings** being an inner **coating** being the reaction prod.  
 of: (i) a **polyisocyanate** selected from diphenylmethane  
 diisocyanate, toluene diisocyanate and/or their derivs.  
 or **polymers** which contain 1.5-3 **isocyanate** gpc. per  
 molecule and 10-50% NCO; and (ii) a **polyol** having 2-6 OH gpc.  
 and one 10-22C aliphatic moiety. The ratio of **polyisocyanate** NCO  
 gpc. to **polyol** OH gpc. is 0.8-3 and another **coating**  
 consists of an organic **wax** having a drop m.pt. of 50-120  
 °C. Also claimed is the production of the above fertiliser which  
 comprises: (i) heating fertiliser **particles** above the  
**polyol** component's m.pt. but X226F100 °C; (ii) mixing by  
 gentle agitation and adding the aforementioned polyol to achieve  
 the desired 6.8-3 NCO:OH ratio and a uniform **polyol distribution**  
 ; (iii) reacting with the aforementioned polyisocyanate to form  
 a solidified polyurethane coating on the fertiliser particles; (iv)  
 adding an organic wax with a 50-120 °C drop  
 m.pt. to produce an outer wax **coating**; and (v) cooling  
 with continuous agitation to below the wax m.pt.

**ADVANTAGE** - The process facilitates the production of bagged fertilisers  
 that maintain their water insoluble nitrogen (WIN) content during shipping  
 and storage. It also avoids the problems associated with conventional  
 particulate fertilisers e.g. phytotoxicity caused by rapid  
 release of plant food, nutrient depletion by  
 leaching and vapour hazards due to application of **coatings** using  
 solvents.

L47 ANSWER 10 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1992-409875 [50] WPIX  
 DNC C1992-181773 [21]  
 TI Biodegradable **coated** **granular** fertiliser - prepared by  
**coating** fertiliser with reaction prod. of **poly**:  
**isocyanate** and **poly:hydroxyl** cpd. derived from  
 e.g. wool grease  
 DC A25; A97; C04; D23  
 IN HATANO K; IWAGAMI A; UCHIDA Y; YAMASHITA M  
 PA (YUKI-N) YUKISHITSU HIRYO SEIBUTSU KASSEI RIYOU  
 CYC 1  
 PIA JP 04305085 A 19921028 (199250)\* JA 6[0] ---  
 ADT JP 04305085 A JP 1991-66508 19910329  
 PRAI JP 1991-66508 19910329  
 AB JP 04305085 A UPAB: 20050505  
 A **coated** **granular** fertiliser is prepared by  
**coating** a **granular** fertiliser is prepared by  
**coating** a **granular** fertiliser with the reaction prod. of  
 (i) **polyhydroxyl** cpd(s). of wool grease, lanolin, lanolin fatty  
 acid(s) or a lanolin alcohol recovered upon washing wool or mixture of these  
 cpds., with (ii) **polyisocyanate**.  
 Preparation of the **coated** **granular** fertiliser involves  
 attaching an organic solvent solution of the **polyhydroxyl** cpd. (s)  
 and **polyisocyanate** to the surface of a **granular**

fertiliser, pref. immersing the **granular** fertiliser in the organic solvent solution and then withdrawing it, or pref. spraying the organic solvent solution on a **granular** fertiliser which is in the fluid state, and then evaporating the organic solvent, and pref. repeating the processes of attachment of the organic solvent solution and evaporation of the organic solvent.

USE/ADVANTAGE - Fertiliser is **coated** with urethane-like reaction prod. of natural **polyhydroxyl** cpd(s). derived from wool and **polyisocyanate**. Homogeneous **coat** is formed on the surface of the **granular** fertiliser, permitting modification of the thickness of the **coat**, thereby regulating the rate of dissolution of the fertiliser component. In addition, the **coat** has a biodegradability, and avoids environmental pollution or residual problem.

L47 ANSWER 11 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1988-301638 [43] WPIX  
 DNC C1988-133618 [21]  
 DNN N1988-228940 [21]  
 TI Friable aerated fibrous polyurethane materials - for plant **growth** media, obtd. from **poly:ol** e.g. sucrose with **poly:isocyanate** especially di:phenylmethane di:  
**isocyanate** in tert. aliphatic amine  
 DC A25; A97; C03; P13  
 IN GALAN M; JOLLY A J  
 PA (SOPH-N) SOPHOPAR SOC PARTIC  
 CYC 1  
 FIA FR 2611725 A 19880909 (198843)\* FR 9[0] <--  
 ADT FR 2611725 A **FR 1987-2665 19870227**  
 PRAI **FR 1987-2665 19870227**  
 AB FR 2611725 A UPAB: 20050429  
 Polyurethane-based materials have a friable aerated fibrous structure, absorb at least 90% of their volume of water in a short time when immersed in water and release at least 90% of the absorbed water in the same short time when removed from the water.  
 The materials are produced by reacting a **polyol** (I) with a **polyisocyanate** (II) in the presence of a catalyst (III) and a blowing agent (IV) under conditions such that the exothermic reaction produces a higher core temperature than is normal for foam production, the reaction pref. being stopped when the core temperature reaches 100-120 deg. C.. (I) is especially a sucrose or sorbitol derivative with an OH number of 500-700. (II) is especially 4,4'-diphenylmethane **diisocyanate** (DDI). (III) is a tert. aliphatic amine. (IV) is a 'Freon', CH<sub>2</sub>Cl<sub>2</sub> or H<sub>2</sub>O. The reaction mixture may also contain a silicone-type surfactant. The (II):(I) weight ratio is 140-160:100.  
 USE - The materials are useful as plant **growth** media.

L47 ANSWER 12 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1987-362376 [51] WPIX  
 CR 1988-063879  
 DNC C1987-155212 [21]  
 TI Attrition resistant **controlled release** fertilisers - formed by surrounding fertiliser containing amino gps. with polyfunctional **isocyanate**, then organic **poly:ol**  
 DC A23; A25; A97; C04  
 IN MOORE W P  
 PA (MOOR-I) MOORE W P

CYC 1  
 PIA US 4711659 A 19871208 (198751)\* EN 8[0] <--  
 ADT US 4711659 A US 1986-897160 19860818  
 PRAI US 1986-897160 19860818  
 AB US 4711659 A UPAB: 20060105  
 An attrition resistant, **controlled release**, fertiliser  
**particle** compsn. comprises: (a) a water soluble central mass of a  
 plant food cpd. containing NH<sub>2</sub> functional gps. amounting to at least 10%, (b)  
 a base **coating**, surrounding and chemically bonded to the central  
 mass and consisting of substd. ureas, formed by reacting a molecular  
 excess of a liquid polyfunctional **isocyanate** (I) with the NH<sub>2</sub>  
 functional gps. of the central mass and (c) a water insoluble sealing  
 layer, surrounding and chemically bonded to the base **coating**,  
 formed by the reaction and **polymsn.** of the excess polyfunctional  
**isocyanate** of the base **coating** with an amount of anhydrous  
 organic **polyol** (II) sufficient to produce a NCO to OH moiety  
 ratio between 1 and 3.  
 Pref. (I) is **polymeric** diphenylmethane **diisocyanate**  
 containing 30-33% NCO and exhibiting a viscosity of 60-120 cP at 25 deg.C.  
 Pref. (II) is selected from aliphatic, aromatic and aliphatic aromatic  
 polyethers and polyesters terminating in OH gps., the **polyols**  
 containing less than 0.1% water and exhibiting hydroxyl numbers of 200-400.  
 Pref. the water soluble central mass is a **particle** or fertiliser  
 selected from urea, biuret, guanidine, ureaform and melamine.  
 ADVANTAGE - Little or no attrition occurs and **release**  
**control** is maintained even when the **coated**  
**particles** receive severe vibration and abrasion through repeated  
 rough handling. The mass of **particles** require no conditioning,  
 such as adding **diatomaceous earth**, to make them free  
 flowing and storage stable for long periods of time without agglomerating.

L47 ANSWER 13 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1987-008520 [02] WPIX  
 DNC C1987-003212 [21]  
 DNN N1987-006180 [21]  
 TI **Coating** water soluble **granules** with water porous resin  
 - obtd. from **poly:isocyanate**, aromatic **poly:**  
 ol hydroxylated plasticiser and opt. diluent and/or liquid amine  
 catalyst  
 DC A32; A97; C03; C04; P11; P42  
 IN KOEGLER H; KOGLER H; KUHLMANN P; WINTER R  
 PA (ASHL-C) ASHLAND OIL INC; (ASHL-N) ASHLAND-SUDCHEM KER; (ASHL-N)  
 ASHLAND-SUEDCHEMIE-KERNFEST GMBH  
 CYC 13  
 PIA DE 3544451 C 19870115 (198702)\* DE 6 <--  
 EP 230601 A 19870805 (198731) DE <--  
 JP 62144784 A 19870627 (198731) JA <--  
 US 4772490 A 19880920 (198840) EN 5 <--  
 ES 2000075 A 19871116 (198911) ES <--  
 EP 230601 B1 19921111 (199246) DE 9[0] <--  
 DE 3687118 G 19921217 (199252) DE <--  
 JP 07016648 B2 19950301 (199513) JA 5 <--  
 ADT DE 3544451 C DE 1985-3544451 19851216; DE 3687118 G DE  
 1986-3687118 19861215; EP 230601 A EP 1986-117434 19861215;  
 EP 230601 B1 EP 1986-117434 19861215; DE 3687118 G EP  
 1986-117434 19861215; JP 62144784 A JP 1986-296836 19861215  
 ; JP 07016648 B2 JP 1986-296836 19861215; US 4772490 A US  
 1986-942155 19861216  
 FDT DE 3687118 G Based on EP 230601 A; JP 07016648 B2 Based on JP 62144784 A  
 PRAI DE 1985-3544451 19851216

AB DE 3544451 C UPAB: 20060105  
 Process for **coating** water-soluble **granules** with a water-porous resin comprises treating the **granules** with a mixture of a **polyisocyanate** (pref. aromatic, e.g. **diisocyanatodiphenyl-methane**), a **polyol** obtd. by condensn. of phenols with aldehydes, a plasticiser containing an OH gp. (e.g. castor **oil** or polyetherpolyols), and opt. an OH-containing diluent (e.g. diacetone alcohol, BuOH or polyetherpolyols) and/or a liquid amine as catalyst. The **coated particles** are opt. treated with a gaseous amine, mixed with air or inert gases, to harden the **coating**.

USE - The process is especially applicable to fertilisers and plant protection agents, allowing a **controlled** and gradual **release** of the active components.

L47 ANSWER 14 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1985-037841 [06] WPIX  
 DNC C1985-016347 [21]  
 TI Urethane **prepolymer** production and use in aggregate consolidation - by layering **poly:ol** over dense **poly:isocyanate** and reacting at interface  
 DC A25; A97; C03  
 IN DEDOLPH R R  
 PA (GRAV-N) GRAVI-MECHANICS CO  
 CYC 1  
 PIA US 4495310 A 19850122 (198506)\* EN 7[0] <--  
 ADT US 4495310 A US 1981-262204 19810508; US 4495310 A US 1982-350946 19820222; US 4495310 A US 1983-493378 19830510  
 PRAI US 1983-493378 19830510  
 AB US 4495310 A UPAB: 20050422  
 Preparation of a urethane **prepolymer** (I) comprises adding a di- or **polyisocyanate** (II) to a polyether or polyester cpd. (III) under anhydrous conditions to initiate an exothermic condensation reaction. The temperature of (II) and (III) is such that the temperature after addition is at most 120 deg.C, and the density of (II) is greater than that of (III), addition being such that separate layers are formed. The reaction is then allowed to proceed to form (I).  
 (I) may be further reacted with water to form a cellular **polymer**, or with an aqueous-slurry of unconsolidated aggregate material to form a cellular **polymer** binding the aggregate. The **polymers** obtd. above are also claimed.  
 USE/ADVANTAGE - (I) is a viscous liquid with a high degree of crosslinking, leading to early setting after reaction with water. Low CO<sub>2</sub> evolution occurs on reaction with water, giving a relatively low degree of expansion and consequently a low degree of foam shrinkage after reaction. When used to consolidate aggregate materials, the binding ability of the **polymer** is superior to that obtd. with **polymers** produced with mixing of (II) and (III), and no aging or curing of the **prepolymer** before reaction with water/aqueous slurry is required. Variation in **polymer** expansion and shrinkage is decreased and foams obtd. have increased strength after setting, as well as increased resistance to puncture and shear forces. A lower variation in pot life is shown by foams used for consolidation. The consolidated aggregate is useful e.g. as a plant **growth** supporting rooting medium.

L47 ANSWER 15 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1984-013794 [03] WPIX  
 DNC C1984-005780 [21]  
 TI Pelletising agrochemicals or fertiliser - using binder obtd. from organic

**poly:isocyanate** and **polyethylene oxide**

DC A97; C03; C04  
 IN TAKAO S; YAMADA Y; YAMAMOTO S  
 PA (NIPO-C) NIPPON POLYURETHANE KOGYO KK  
 CYC 1  
 PIA JP 58205536 A 19831130 (198403)\* JA 5[0] <--  
 ADT JP 58205536 A JP 1982-87269 19820525  
 PRAI JP 1982-87269 19820525  
 AB JP 58205536 A UPAB: 20050420  
 Method comprises using as binder an emulsion produced by mixing with water a self emulsification **isocyanate** produced by reaction of 100 weight% organic **polyisocyanate** and 1-20 weight% polyethyleneoxyd derivative of formula  $RO(CH_2CH_2O)_nH$ , or  $R(OCH_2CH_2)_mOOC.CH_2.COOC(CH_2CH_2O)_nR'$  (where R and R' are each 1-4C alkyl; n and m is 5-120 in average). The organic **polyisocyanate** is e.g., **trilenediisocyanate**, **diphenylmethanediisocyanate**, **polyphenylmethanepolyisocyanate**, **naphthylenediisocyanate**, **hexamethylenediisocyanate**, solution The polyethyleneoxid derivative is e.g., methoxy polyethyleneglycol cf mol. weight of respectively 300, 500, 700 and 900, and bis (methoxypolyethyleneoxy)malonate having molecular weight of respectively 500, 1500, and 2000, etc. The aqueous emulsion of self emulsification type **polyisocyanate** cpd. is stable at normal temperature, and its viscosity remains constant for a long period thus forming uniform product. It enables mfr. of pellets in a short time without sticking of material. It has a high binding strength preventing the pellets formed from dusting. Its binding effect lasts a long time thus eliminating work for repeated application.

L47 ANSWER 16 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1977-31919Y [18] WPIX  
 TI Coated granular fertiliser with long lasting action - using polyurethane **coating** obtd. from polyoxypropylene and **isocyanate**  
 DC A97; C04  
 PA (UBEI-C) UBE IND LTD  
 CYC 1  
 PIA JP 52038361 A 19770324 (197718)\* JA <--  
 JP 54039298 B 19791127 (197951) JA <--  
 ADT JP 52038361 A JP 1975-113607 19750922  
 AB JP 52038361 A UPAB: 20050417  
 Fertiliser is obtd. by **coating** a **granular** fertiliser opt. already **coated** with mineral substance and/or **wax**, with polyurethane layer. This is formed by reacting polyoxypropylene cpd. having a kinematic viscosity <4000 cP. (25 degrees C) or polyoxypropylene cpd. mixture whose kinematic viscosity is adjusted to <4000 cP (25 degrees C) with an **isocyanate** cpd.

L47 ANSWER 17 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1975-44078W [26] WPIX  
 TI Horticultural foam structures - prepared by reacting NCO capped polyethylene oxide reactant and an aqueous reactant  
 DC A25; A35; A97; C03; P13  
 IN FRISCH K C; WOOD L L  
 PA (GRAC-C) GRACE & CO W R  
 CYC 2  
 PIA US 3889417 A 19750617 (197526)\* EN <--  
 CA 1012375 A 19770621 (197727) EN <--  
 ADT US 3889417 A US 1972-250012 19720503; US 3889417 A US 1972-279403 19720810; US 3889417 A US 1974-470492 19740516  
 PRAI US 1974-470492 19740516

AB US 3889417 A UPAB: 20051230  
 An improved crosslinked hydrophilic foam structures is prepared by reacting as continuous sheet, **isocyanate** capped polyoxyethylene **polyol** (I) having a reaction functionality >2 with an aqueous reactant (II) in the presence of a horti-cultural material the ratio of moles of water/moles NCO groups being 6.5-390 in (II) and (I) respectively. The foam sheet is useful as a carrier for pesticides, herbicides, seeds or the like. Supported foam sheet provides an effective means for protecting dormant seeds, for sustaining **seed** germination plant growth, or opt. for controlled **release of** pesticides and/or herbicides. These foams can be made biodegradable.

L47 ANSWER 18 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1974-87182V [51] WPIX

TI Hydrophilic open-celled polyurethane foam - from high molecular weight trifunctional **polyol** and trialkanolamine

DC A25; C03; P13

PA (MONT-C) MONTEDISON SPA

CYC 6

PIA BE 815682 A 19741129 (197451)\* FR <--  
 NL 7407077 A 19741203 (197451) NL <--  
 DE 2425707 A 19750102 (197504) DE <--  
 FR 2231704 A 19750131 (197512) FR <--  
 GB 1466712 A 19770309 (197710) EN <--  
 IL 44902 A 19770630 (197730) EN <--

PRAI IT 1973-24828 19730530

AB BE 815682 A UPAB: 20050414

Hydrophilic open-celled polyurethane foam, especially useful as a plant culturing substrate, is prepared by reacting (I) 10-50 pts. weight trifunctional **polyol** of the amino type, especially a trialkanolamine, (II) 50-90 pts. weight trifunctional **polyol** having a mol. weight of 500-3000, especially 1000, (III) 0-10 pts. weight **polyol** having a functionality of 2-6, and a mol. weight of less than 1000, (IV) 1-5 pts. weight water, (V) 0.1-2 pts. weight silicone surfactant, (VI) 0.1-5 pts. weight amino catalyst, (VII) 0-50 pts. weight lower halohydrocarbon blowing agent, and (VIII), an organic **isocyanate**, the NCO equivalent being 40-80% of the theoretical amount required to react with the active H atoms of the **polyols** and water.

L47 ANSWER 19 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN

AN 1974-58594V [33] WPIX

TI Hydrophilic open-cell polyurethane foams for plant culture - obtd from specified **polyols** reacted with limited amts. of **polyisocyanates**, giving improved water retention

DC A25; A97; C03; P13

IN JABS G; LOEW G; NIGGEMANN J

PA (FARB-C) BAYER AG

CYC 10

PIA DE 2304892 A 19740808 (197433)\* DE <--  
 NL 7401205 A 19740805 (197433) NL <--  
 BE 810367 A 19740730 (197434) FR <--  
 FR 2216315 A 19741004 (197448) FR <--  
 JP 49110798 A 19741022 (197452) JA <--  
 AT 7400730 A 19751015 (197544) DE <--  
 GB 1423075 A 19760128 (197605) EN <--  
 US 3970618 A 19760720 (197631) EN <--  
 IL 44107 A 19761130 (197651) EN <--  
 CH 584726 A 19770215 (197716) DE <--

ADT DE 2304892 A. DE 1973-2304892 19730201

AB DE 2304892 A UPAB: 20050414

The foams (I) are made from (A) a **polyol** or mixture with hydroxyl value of 900-1800; and (B) a **polyisocyanate** with polyurethane, urea, carbodiimide, allophanate, **isocyanurate** and for biuret gpus. with aromatic bound NCO gpus., in amount of 20-60% of the theoretical quantity to react with all active hydrogen atoms in the mixture (I) have a density of 6-30 kg m-3 and after saturation and application of a suction of 30 cm water column, retain at  $\geq 25$  volume% of water. The foams are suitable for soil-less propagation of cuttings and **growth** of plants. They require less watering and after planting out show less tendency than known foams to dry out due to capillary attraction of moisture by the surrounding soil.

L47 ANSWER 20 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1974-43240V [23] WPIX  
 TI Horticultural hydrophilic foam structures - for protecting dormant seeds etc. prepared from **isocyanate** capped polyoxyethylene **polyol** and aqueous reactant containing seeds  
 DC A25; A97; C03; P13  
 PA (GRAC-C) GRACE & CO W R  
 CYC 2  
 PIA US 3812619 A 19740528 (197423)\* EN <--  
 CA 1004872 A 19770208 (197708) EN <--  
 CA 1014766 A 19770802 (197733) EN <--  
 ADT US 3812619 A US 1972-250012 19720503; US 3812619 A US 1972-279403 19720810; US 3812619 A US 1974-470492 19740516  
 AB US 3812619 A UPAB: 20050414  
 Crosslinked, hydrophilic, horticultural foam structures having three-dimensional networks, are prepared by reacting an **isocyanate** capped polyoxyethylene **polyol** having a reaction functionality >2 with an aqueous reactant, the ratio moles H2O/moles NCO Being 6.5-390 (pref. 20-200), containing either horticultural material, seeds, bulbs or plants, desirably together with suitable nutrients, **fertilisers** and pesticides. Opt, a crosslinking agent may also be present. The **polyol moiety** has a mol. weight of 200-20,000, pref. 600-6,000 and OH functionality 2-6.

L47 ANSWER 21 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1974-27725V [15] WPIX  
 TI Polyurethane foams contg **fertilizers** - foamed using alkaline hydro-xides and organotin cpds  
 DC A25; A97; C04  
 PA (KOKC-C); (KOKC-C) KOHKOKU CHEM IND CO LTD  
 CYC 1  
 PIA JP 48079899 A 19731026 (197415)\* JA <--  
 ADT JP 48079899 A JP 1972-10286 19720128  
 AB JP 48079899 A UPAB: 20050414  
 A foaming polyurethane compsn. containing **fertilizers** is mixed with alkali metal hydroxide or alkaline earth metal hydroxide and an organotin cpd. and foamed to give **fertilizer** containing polyurethane foam. In an example **powdered** com. (NH4)3PO4 500, **powdered** NaOH 10, TG 3000 (tri-functional polyether mol. weight 3000) 1000, sn octanoate 8, N-methylmorpholine 2, pentamethyl-diethylenetriamine 3, L540 (foam controlling agent) 12, and water 35 g were mixed in that order, stirred 60 sec. and mixed with 450 g tolylene **diisocyanate** to give a foam without any difficulties.

L47 ANSWER 22 OF 22 WPIX COPYRIGHT 2008 THE THOMSON CORP on STN  
 AN 1967-04516G [00] WPIX  
 TI **Fertilizer**  
 DC C00

PA (SUNO-C) SUN OIL CO

CYC 1

PIA NL 6405905 A (196800)\* NL

PRAI US 1964- 19640527

AB NL 6405905 A UPAB: 20050412

**Fertilizer** contng. free urea, incorporated in a polyurethane foam.

**Plant nutrients.**

Unlike in prior-art urea-impregnated foams, the urea is completely and very thoroughly dispersed within the foam, thus affording a very **slow release** of the urea on leaching with water.

The polyurethane foams are prepared by reaction of a **diisocyanate** with one or more **polyols** to give **polymers**, the properties of which depend on the type of **polyols** used, straight **polyols** yielding soft foams and branched **polyols** yielding rigid foams. Halogenated hydrocarbons or H<sub>2</sub>O (in combination with **diisocyanate**) are used as blowing agents. The **polymerisation** reaction is catalysed by addition of a suitable catalyst, whereas finally an emulsifying agent or any other surfactant may be incorporated. The urea is added to the reaction mixture before the **polymerisation** takes place, using such a rate that the formation of the foam is not seriously impaired.

=> => fil hcplus

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FILE LAST UPDATED: 12 Feb 2008 (20080212/ED)

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L134 ANSWER 1 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

AN 2005:427778 HCPLUS

DN 143:132599

TI **Slow-releasing compound fertilizer**

containing **particles** with polymer framework

IN Li, Zhong; Shi, Yuanliang; Zhang, Xudong

PA Shenyang Inst. of Applied Ecology, Chinese Academy of Sciences, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, No pp. given

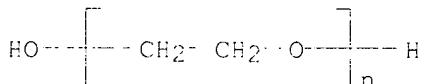
CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1491925	A	20040428	CN 2003-111314	20030328 <--
PRAI	CN 2003-111314		20030328 <--		
AB	The title <b>fertilizer</b> consists of <b>particles</b> (2-6 mm) with active ingredients dispersed in polymer framework (0.01-2 weight% of the compound <b>fertilizer</b> ). The active ingredient are soluble N, P and K <b>fertilizers</b> at a weight ratio of N : P2O5 : K2O = 8-20 : 5-20 : 5-20. Expts. show that the title <b>fertilizer</b> has longer releasing period than normal <b>fertilizers</b> .				
IT	25322-68-3, Polyethylene oxide RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses) (slow-releasing compound <b>fertilizer</b> containing <b>particles</b> with polymer framework)				
RN	25322-68-3 HCAPLUS				
CN	Poly(oxy-1,2-ethanediyl), $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)				



L134 ANSWER 2 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:323665 HCAPLUS

DN 142:391676

TI Coating for **fertilizer**

IN Whittington, Albert A.

PA USA

SO U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

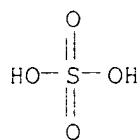
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005076687	A1	20050414	US 2003-682347	20031010 <--
PRAI	US 2003-682347		20031010 <--		

AB Method and apparatus for coating **fertilizer** in pellet or other form to impart time-release characteristics, is given. A **polyurethane** coating **encapsulates fertilizer particles**, forming a hydrophobic coating for slow-release qualities. The **urethane** polymer coating is formulated with an **isocyanate** and a combined fluid of a polyether **polyol**, a **Me ester** derivative of **plant or vegetable oil**, a T-12 curing catalyst, barium sulfate, and an **oil-based dye**. The barium sulfate imparts phys. strength to and enhances color quality of the **polyurethane** coating, acts as a detackifier and maintains temperature in the coating reactor. The inventive formulation is effective in the practical polymer coating of sulfate-based or other **fertilizer** pellets in a time-release **fertilizer**. An apparatus is provided for carrying out the coating process.

IT 7727-43-7, Barium sulfate

RL: MOA (Modifier or additive use); USES (Uses)  
(**fertilizer** coating containing)

RN 7727-43-7 HCAPLUS  
CN Sulfuric acid, barium salt (1:1) (CA INDEX NAME)



• Ba

IT 849765-90-8P

RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation as **fertilizer** coating)

BN 849765-90-8 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy-, ether  
with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), polymer with Isonate  
143L (9CI) (CA INDEX NAME)

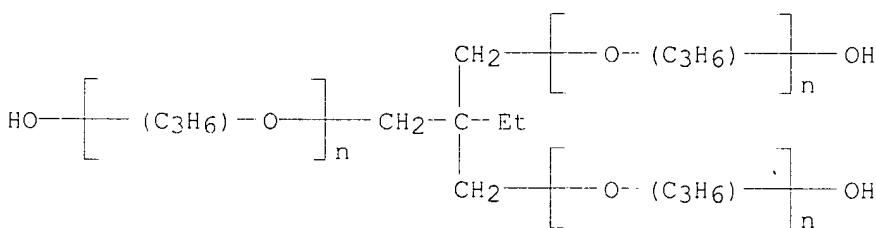
CM 1

CRN 39394-41-7  
CMF Unspecified  
CCT MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 25723-16-4  
CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>14</sub> O<sub>3</sub>  
CCI IDS, PMS



L134 ANSWER 3 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

ANSWER'S OF TO HCAPP  
AN 2005:231667 HCAPLUS

AN 2005.25100  
DN 142:297421

TI Blocking-resistant granular fertilizers coated with waxes and polyurethanes, and their manufacture

WITH WAVES AND

IN Taber, Nobuaki  
EA Sumitomo Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

38 38... ROKAI TO

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005067904	A	20050317	JP 2003-208184	20030821 <--
PRAI	JP 2003-208184		20030821 <--		

AB Title **fertilizers** are manufactured by **coating wax-coated granular fertilizers** with **polyurethanes** and **overcoating** with 0.01-0.2 weight% (in total, based on the **coated fertilizers**) hydrogenated oils and NaO<sub>3</sub>SO(CH<sub>2</sub>)<sub>11</sub>Me at 63-85°. Thus, urea **granules** were **coated** with (A) Hi-Mic 1045 (microcryst. wax), (B) a mixture of Sumidur 44V10 (polymeric MDI), Sumiphen TM (branched polyether-**polyol**), and 2,4,6-tris(dimethylaminomethyl)phenol, and (C) a mixture of hydrogenated rapeseed oil and Emal 10 (NaO<sub>3</sub>SO(CH<sub>2</sub>)<sub>11</sub>Me) in this order, and stored at 70° for 2 days and 25° for 4 days under 500 g weight to show no blocking.

IT 57029-46-6P

RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (blocking-resistant **granular fertilizers** coated with waxes, **polyurethanes**, and hydrogenated oil-Na lauryl sulfate mixture)

RN 57029-46-6 HCPLUS

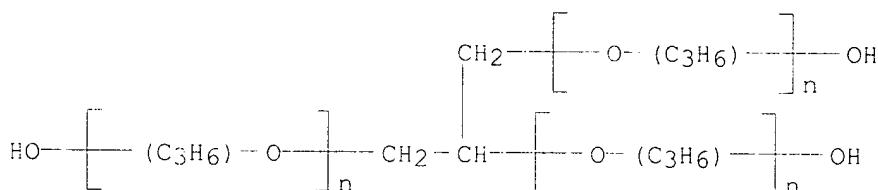
CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  $\alpha, \alpha', \alpha''-1, 2, 3$ -propanetriyltris[ $\omega$ -hydroxypoly{oxy(methyl-1,2-ethanediyl)}] (CA INDEX NAME)

CM 1

CRN 25791-96-2

CMF (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>

CCI IDS, PMS



CM 2

CRN 9016-87-9

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 4 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

AN 2005:135590 HCPLUS

DN 142:218450

TI **Polyurethane-coated nonfloating fertilizer granules**

IN Tabei, Nobuaki

PA Sumitomo Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005041700	A	20050217	JP 2003-199654	20030722 <--
PRAI JP 2003-199654		20030722	<--	

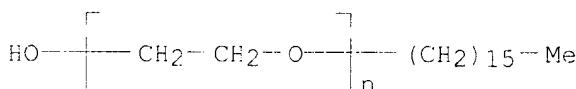
AB Title **granules** contain nonionic surfactants with HLB >10 to <16 and inorg. fine powders at 0.05-0.5 weight% (based on total weight) on the surface of the **coating** layer. Thus, **granular** urea was **coated** with Sumidur 44V10 (polymeric MDI), Sumiphen TM (branched polyether-polyol), and 2,4,6-tris(dimethylaminomethyl)phenol, cured, and **overcoated** with Pegrnol O 16 (polyoxyethylene oleyl ether) and Tokuyuki Cut Clay to give nonfloating **coated** **granules**.

IT 9004-95-9, Pegrnol C 18 9004-98-2, Pegrnol O 16

RL: AGR (Agricultural use); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)  
(nonfloating **fertilizer granules coated** with **polyurethanes**, surfactants, and inorg. fine particles)

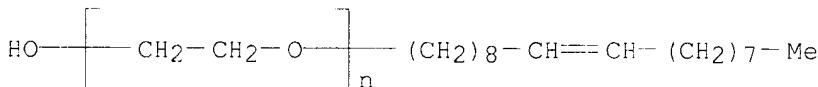
RN 9004-95-9 HCPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -hexadecyl- $\omega$ -hydroxy- (CA INDEX NAME)



RN 9004-98-2 HCPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -(9Z)-9-octadecen-1-yl- $\omega$ -hydroxy- (CA INDEX NAME)



IT 57029-46-6P

RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(nonfloating **fertilizer granules coated** with **polyurethanes**, surfactants, and inorg. fine particles)

RN 57029-46-6 HCPLUS

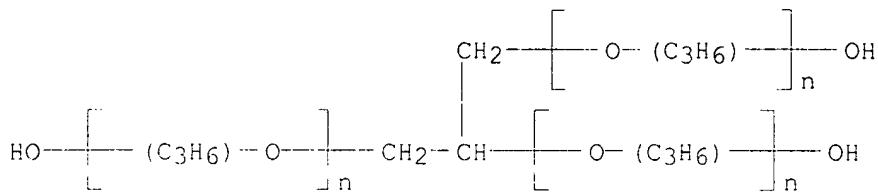
CN Isocyanic acid, polymethylenopolyphenylene ester, polymer with  $\alpha,\alpha',\alpha''$ -1,2,3-propanetriyltris[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] (CA INDEX NAME)

CM 1

CRN 25791-96-2

CMF  $(\text{C}_3\text{ H}_6\text{ O})_n (\text{C}_3\text{ H}_6\text{ O})_n (\text{C}_3\text{ H}_6\text{ O})_n \text{C}_3\text{ H}_8\text{ O}_3$

CCI 1DS, PMS



CM 2

CRN 9016-87-9  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 5 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
AN 2005:9504 HCAPLUS

DN 142:74019

## TI Production of

## with polymers

IN Tabei, Nobuaki  
PA Sumitomo Chemical Co., Ltd.,

SO Jpn. Kokai To

**CODEN:**

DT Patent

LA, Japa

FAN.CNT 1

-----  
PI JP 2005001957 A 20050106 JP 2003-168921 20030613 <--  
PRAI JP 2003-168921 20030613 <--  
AB **Granular fertilizer is coated with polyurethane film produced by the reaction of polyester polyol and polyisocyanate.** The polyester **polyol** may be hydrogenated castor oil, or combination of hydrogenated castor oil and non-hydrogenated castor oil. The **coated granules** are naturally degraded in the soil, the active agent is slowly released.

IT 75-13-8D, Isocyanic acid, polymers

RL: RCT (Reactant); RACT (Reactant or reagent)  
(production of **granular fertilizer coated**)

with polyurethane

RN 75-13-8 HCPLUS  
CN ~~Transcendental (CSI CSI CSI)~~ (CSI INDEX NAME)

$$\text{HN} \text{---} \text{C} \text{---} \text{O}$$

1.1.34 ANSWER 6 OF 46 HCABPLUS COPYRIGHT 2008 ACS ON STN

EN54 ANSWER 3 OF 40 HCABF  
AN 2004:931641 HCABF115

AN 2004.95104  
DN 141-365761

TI Urethane prepolymers for coating of granular fertilizers, their manufacture, and the polymer-coated granular fertilizers

IN Tabel, Nobuaki

PA Sumitomo Chemical Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004307736	A	20041104	JP 2003-106151	20030410 <--
PRAI JP 2003-106151		20030410 <--		

AB The prepolymers are manufactured by mixing **polyols** with amine-based catalysts and adding **polyisocyanates** to the mixts. A mixture containing Sumiphene TM (polyether **polyol**; OH value 372 mg/g) 141.8, Sumiphene 1600U (polyether **polyol**; OH value 115 mg/g) 69.2, and castor oil (OH value 161 mg/g) 42.5 g was stirred with 7.3 g 2,4,6-tris(dimethylaminomethyl)phenol at 25° for 30 min and then stirred with 9.7 g Sumidur 44V10 (polymeric MDI) to give a prepolymer, which was tumbled with a **granular urea fertilizer** at apprx.70° and then with Tokuyuki Cut Clay (cut clay) and fine-powdered Na lauryl sulfate to give a **coated fertilizer**

IT 9016-87-9DP, Sumidur 44V10, polyoxyalkylene-**polyurethanes**  
 25791-96-2DP, Sumiphene TM, polyoxyalkylene-**polyurethanes**  
 57029-46-6P, Sumidur 44V10-Sumiphene TM copolymer  
 RL: AGR (Agricultural use); IMF (Industrial manufacture); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (manufacture of **urethane** prepolymers for **coating** of **granular fertilizers**)

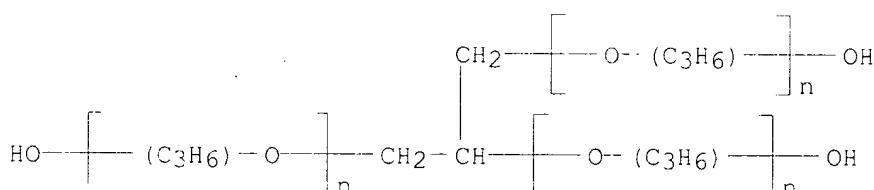
RN 9016-87-9 HCPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 25791-96-2 HCPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha,\alpha',\alpha''$ -1,2,3-propanetriyltris[ $\omega$ -hydroxy- (CA INDEX NAME)



RN 57029-46-6 HCPLUS

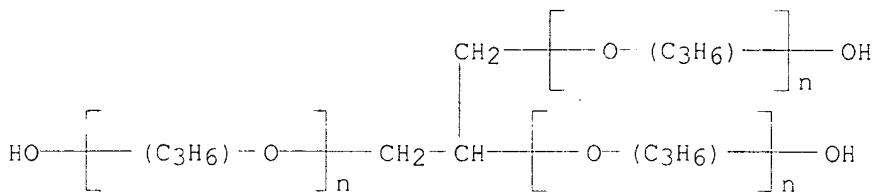
CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  $\alpha,\alpha',\alpha''$ -1,2,3-propanetriyltris[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)]] (CA INDEX NAME)

CM 1

CRN 25791-96-2

CMF (C3 H6 O)n (C3 H6 O)n (C3 H6 O)n C3 H8 O3

CCI IDS, PMS



CM 2

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 7 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2004:651220 HCAPLUS

DN 141:156591

TI **Coated granules containing fertilizers**

IN Kuramochi, Hitoshi; Uchino, Masazumi

PA Chisso Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

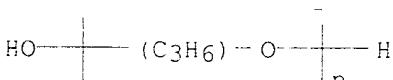
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004224609	A	20040812	JP 2003-12112	20030121 <--
PRAI JP 2003-12112		20030121 <--		

AB **Granules containing fertilizers are coated with polyurethane** (e.g., polypropylene glycol), and the strength of the **polyurethane** film is 7 to 11 MPa. The rate of the **release** of active agents from the **granules** is regulated and **controlled**. For example, for the first period after the **granules** are applied to the ground, the **release** of active compds. is held back, followed by the **releasing** period that lasts a **controlled** duration.

IT 25322-69-4, Polypropylene glycol

RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (coating polyurethanes for controlled-release fertilizer granules)

RN 25322-69-4 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)

L134 ANSWER 8 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:588185 HCAPLUS

DN 141:123157

TI Production of **fertilizer granules coated with polyurethane**

IN Tabei, Nobuaki

PA Sumitomo Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004203667	A	20040722	JP 2002-374040	20021225 <--
PRAI JP 2002-374040		20021225	<--	

AB **Granular slow-release fertilizers**

with a coating that naturally disintegrates after dissoln. of the fertilizer component(s) are coated with a polyurethane formed by reacting a polyester-polyether polyol component and a polyisocyanate component at an NCO/OH equivalent ratio of 0.9-1.2. The mixed polyester-polyether polyol comprises hardened castor oil and a propylene oxide adduct of a C3-6 polyhydric alc. (weight ratio = 20:80-80:20). Thus, granular urea was coated with urethane resin obtained by blending a mixture of molten hardened castor oil and trimethylolpropane-propylene oxide adduct (OH value 372 mg KOH/g) with Sumidur 44V10 at a coating amount of 8%. The leaching rates for 2 fertilizers differing in amts. of hardened castor oil, polyol, and MDI used were 65% and 82% in 100 days.

IT 9016-87-9D, Sumidur 44V10, reaction products with castor oil and propoxylated trimethylolpropane 25723-16-4D, reaction products with castor oil and polymeric MDI

RL: AGR (Agricultural use); POF (Polymer in formulation); BIOL (Biological study); USES (Uses)

(production of **slow-release granular fertilizers coated with polyurethane**)

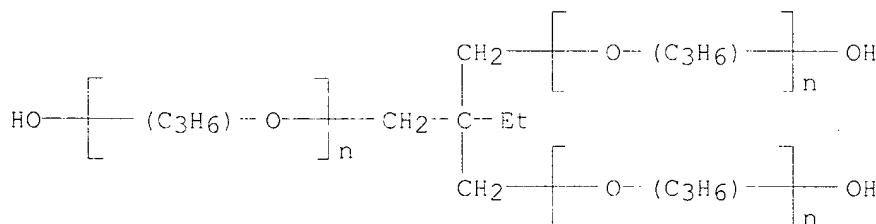
RN 9016-87-9 HCPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 25723-16-4 HCPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1) (CA INDEX NAME)



L134 ANSWER 9 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

AN 2004:100310 HCPLUS

DN 140:127726

TI **Controlled-release fertilizers produced by coating nutrients with polyurethanes containing organic additives**

IN Wynnyk, Nick P.; Stelmack, Eugene G.; Babiak, Nicolette M.; Carstens, Leslie L.; Xing, Baozhong; Geiger, Albert J.; Eastham, J. David

PA Agrium, Can.

SO U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004020254	A1	20040205	US 2002-210177	20020802 <--
	CA 2436007	A1	20040202	CA 2003-2436007	20030725 <--
	US 2007137274	A1	20070621	US 2006-470059	20060905 <--
PRAI	US 2002-210177	A	20020802 <--		

AB A **controlled-release fertilizer** material comprises a **particulate plant nutrient** surrounded by a **coating** comprising  $\geq 1$  substantially homogeneous layer of a **urethane**-containing compound and an organic additive. With appropriate selection of the additive, the shape and duration of the **release** profile can be modified to suit a wide variety of applications. Thus, 1 kg of urea **fertilizer** was **coated** with 3 layers, each comprised of first applying a mixture of 1.20 g C30+ wax in 4.81 g **Soypolyol** 180 (a synthetic oleo **polyol** derived from soybean oil and having an OH Value of 180) and 2.32 g of **isocyanate**. Six minutes was allowed between applications of each layer, and the total **coat** weight was 2.5%. The product had a relatively **slow**, linear N **release** curve in a water **release** test.

L134 ANSWER 10 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

AN 2004:78179 HCPLUS

DN 140:127724

TI **Controlled-release fertilizer** with improved durability during handling and its production with **coating** containing a **particulate** filler

IN Wynnyk, Nick P.; Stelmack, Eugene G.; Babiak, Nicolette M.; Carstens, Leslie L.; Eastham, J. David; Xing, Baozhong

PA Can.

SO U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004016276	A1	20040129	US 2002-205490	20020726 <--
	CA 2493218	A1	20040205	CA 2003-2493218	20030725 <--
	WO 2004011395	A1	20040205	WO 2003-CA1138	20030725 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003257288	A1	20040216	AU 2003-257288	20030725 <--
	EP 1551783	A1	20050713	EP 2003-771026	20030725 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

JP 2005533741 T 20051110 JP 2004-523696 20030725 <--

US 2006032282 A1 20060216 US 2005-200006 20050810 <--

US 2007169527 A1 20070726 US 2006-615785 20061222 <--

PRAI US 2002-205490 A 20020726 <--

WO 2003-CA1138 W 20030725 <--

US 2005-200006 B1 20050810

AB A **controlled-release fertilizer** material

comprises a **particulate plant nutrient** surrounded by a protective **coating** comprising at least one substantially homogeneous layer of a **urethane**-containing compound and a **filler(s)**.

An organic additive(s) may or may not be present. Thus, urea was **coated** with 2 layers, applied 6 min apart, each comprised of a mixture of C30+ wax in castor oil, and **isocyanate**. Two

further layers, each comprised of a urea dust-castor oil mixture and **isocyanate**, were applied in an **overcoat**

application, and 6 min after application of the components of the 4th layer, the sample was cooled. Comparison of results from a paint shaker simulation with this **fertilizer** and comparative **fertilizer** with a **urethane coat** and wax layer

showed that the mech. handling was improved by the function of the **filler**.

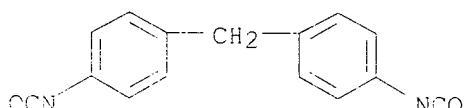
IT 101-68-8D, Diphenylmethane **diisocyanate**, reaction products 26471-62-5D, Toluene **diisocyanate**, reaction products

RL: AGR (Agricultural use); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(production of **controlled-release fertilizer** with improved durability by using **particulate** filler in **coating** of)

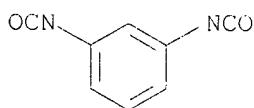
RN 101-68-8 HCAPLUS

CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



RN 26471-62-5 HCAPLUS

CN Benzene, 1,3-diisocyanatomethyl- (CA INDEX NAME)



D1 - Me

L134 ANSWER 11 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:685961 HCAPLUS

DN 139:179430

TI Production of **fertilizer granules coated**

with **urethane** polymers  
 IN Tabei, Nobuaki  
 PA Sumitomo Chemical Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003246692	A	20030902	JP 2002-364773	20021217 <--
PRAI JP 2001-387258	A	20011220	<--	
AB <b>Fertilizer granules</b> or <b>urethane polymer-coated fertilizer granules</b> are coated with a hydrofobic compound (e.g., wax and fatty acids) of m.p. or softening temperature 40 - 120°, <b>coating</b> at temperature higher than the m.p. or softening temperature described above, further <b>coated</b> with un-hardened <b>urethane polymer</b> (e.g., <b>polyisocyanate-polyol</b> reaction products) under the same temperature. These are <b>sustained-release fertilizers</b> useful even in tropical farming areas like those in south-east Asia.				
IT 75-13-8D, Isocyanic acid, esters, polymers, reaction products with <b>polyols</b>				
RL: NUU (Other use, unclassified); USES (Uses)				
IN Uchino, Masazumi				
PA Chisso Corp., Japan				
SO Jpn. Kokai Tokkyo Koho, 7 pp.				
CODEN: JKXXAF				
DT Patent				
LA Japanese				
FAN.CNT 1				

HN==C==O

L134 ANSWER 12 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 2003:503450 HCPLUS  
 DN 139:64834  
 TI **Polyurethane-coated** bioactive substances, compositions containing them, and cultivation of crop using the **coated** substances or the compositions  
 IN Uchino, Masazumi  
 PA Chisso Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003183104	A	20030703	JP 2001-388247	20011220 <--
PRAI JP 2001-388247		20011220	<--	
AB Claimed are bioactive substance <b>particles</b> such as agrochems. and <b>fertilizers</b> <b>coated</b> with <b>polyurethanes</b> prepared by reaction of (a) a mixture of <b>polyols</b> having OH equivalent $\leq 120$ and <b>polyols</b> having OH equivalent $\geq 150$ with (b) <b>isocyanates</b> . Also claimed are compns. containing the <b>coated</b> <b>particles</b> and <b>uncoated</b> bioactive substances and cultivation of crop using the <b>coated</b> substances or the compns. <b>Polyols</b> with different OH equivalent have a function to prolong dissoln. period and a function to increase water-holding capacity of the				

bioactive substances, resp., so dissoln. rate and pattern. of the bioactive **particles** are easily **controlled** by the **polyurethanes**. Urea **granules** (920 g, average particle size 3.4 mm) were **coated** while feeding a mixture of propylene glycol (OH equivalent 38) 6.8, polypropylene glycol (OH equivalent 350) 35.3, and Me<sub>2</sub>NCH<sub>2</sub>CH<sub>2</sub>OH 0.8 g and 38 g polymeric MDI at 65-75° to give **coated** urea **granules**. **Coated** **granules** showed time-release characteristics.

Application of the urea **granules** to cultivation of rice was also shown.

IT 9016-87-9DP, Polymeric MDI, polymers with polypropylene glycol triol and polypropylene glycol or tripropylene glycol 25322-69-4DP, Polypropylene glycol, polymers with polymeric MDI and polypropylene glycol triol 140236-64-2P 162743-76-2P

RL: AGR (Agricultural use); PNU (Preparation, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses) (bioactive substances such as agrochems. and **fertilizers** **coated** with **polyurethanes** prepared using 2 **polyols** with different OH equivalent for **controlled** **release**)

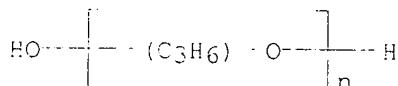
RN 9016-87-9 HCAPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 25322-69-4 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)



RN 140236-64-2 HCAPLUS

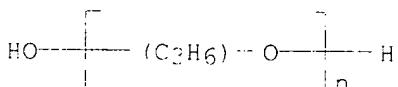
CN 1,2,3-Propanetriol, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] and 1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 25322-69-4

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> H<sub>2</sub> O

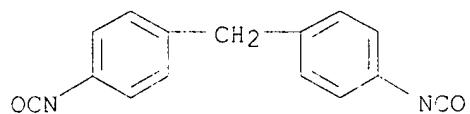
CCI IDS, PMS



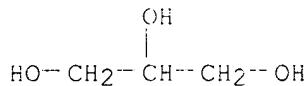
CM 2

CRN 101-68-8

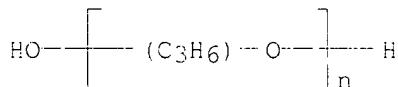
CMF C<sub>15</sub> H<sub>10</sub> N<sub>2</sub> O<sub>2</sub>



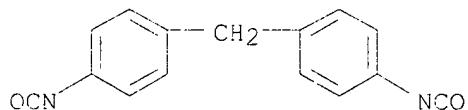
CM 3

CRN 56-81-5  
CMF C3 H8 O3RN 162743-76-2 HCAPLUS  
CN 1,2-Propanediol, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] and 1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

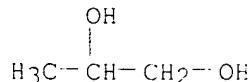
CM 1

CRN 25322-69-4  
CMF (C3 H6 O)n H2 O  
CCI 1DS, PMS

CM 2

CRN 101-68-8  
CMF C15 H10 N2 O2

CM 3

CRN 57-55-6  
CMF C3 H8 O2

L134 ANSWER 13 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:454253 HCAPLUS

DN 139:6283

TI **Coated granular agrochemicals**

IN Winter, Reinhard; Priebe, Christian; Kuhlmann, Peter

PA Ashland Suedchemie-Kernfest GmbH, Germany

SO PCT Int. Appl., 19 pp.

CODEN: PIXXD2

DT **Patent**

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003048075	A1	20030612	WO 2002-DE4352	20021127 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 10158693	A1	20030626	DE 2001-10158693	20011129 <--
	CA 2466531	A1	20030612	CA 2002-2466531	20021127 <--
	AU 2002351700	A1	20030617	AU 2002-351700	20021127 <--
	AU 2002351700	B2	20070913		
	EP 1451129	A1	20040901	EP 2002-787406	20021127 <--
	EP 1451129	B1	20050713		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	BR 2002014523	A	20041103	BR 2002-14523	20021127 <--
	JP 2005511465	T	20050428	JP 2003-549270	20021127 <--
	AT 299485	T	20050715	AT 2002-787406	20021127 <--
	ES 2242079	T3	20051101	ES 2002-787406	20021127 <--
	PT 1451129	T	20051130	PT 2002-787406	20021127 <--
	US 2005005661	A1	20050113	US 2004-497196	20040527 <--
	MX 2004PA05102	A	20050620	MX 2004-PA5102	20040527 <--
PRAI	DE 2001-10158693	A	20011129	<--	
	WO 2002-DE4352	W	20021127	<--	

AB The invention relates to a **coated granular** agrochems., whereby the **coating** is a resin, comprising the reaction producing of at least one compound selected among cardol, cardanol or derivs. thereof or oligomers of these compds. with an **isocyanate**. Examples of agrochems. include **fertilizers**, **plant** protection agents, insecticides, pesticides, fungicides, drying agents and mixts. thereof. The substance **coated** according to the invention has advantageous properties since the resin can be applied in a specified and sparing manner to the substrates due to its low tendency to adhere. In particular, **coated fertilizer granules** are advantageous in that, with regard to the applied amount of **fertilizer**, they can provide more nutrients to the **plant**. In addition, **fertilizers** can be prepared that can provide nutrients to the **plant** over a longer period of time and continuously and they have an exact and reproducible release behavior according to the type of **plant** to be treated. The **polyol** constituents of the **coating** can be obtained from

the renewable raw material cashew nut oil.

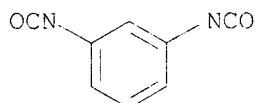
IT 26471-62-5, **Toluenediisocyanate**

RL: RCT (Reactant); RACT (Reactant or reagent)

(cardol/cardanol precondensate from cashew oil as reactant with isocyanates for coating granular agrochems.)

RN 26471-62-5 HCAPLUS

CN Benzene, 1,3-diisocyanatomethyl- (CA INDEX NAME)



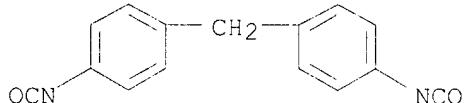
D1-Me

IT 101-68-8, **Diphenylmethanediisocyanate**

RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses) (cardol/cardanol precondensate from cashew oil as reactant with isocyanates for coating of)

RN 101-68-8 HCAPLUS

CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



#### RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File
Ashland Suedchemie Kern	1987			IEP 0230601 A	HCAPLUS
Bayer Ag	2000			IEP 0974568 A	HCAPLUS
Endo, K	2002			US 6358295 B1	HCAPLUS
Moore, W	2000			US 6045810 A	HCAPLUS

L134 ANSWER 14 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2003:297634 HCAPLUS

DN 138:303495

TI **Fertilizer encapsulation using sulfur containing polyols**

IN Markusch, Peter H.; Cline, Robert L.

PA Bayer Corporation, USA

SO Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1302455	A1	20030416	EP 2002-22215	20021001 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				

US 2003089150	A1	20030515	US 2001-976610	20011012 <--
US 6617412	B2	20030909		
CA 2406412	A1	20030412	CA 2002-2406412	20021002 <--
JP 2003119092	A	20030423	JP 2002-297424	20021010 <--
MX 2002PA10000	A	20050816	MX 2002-PA10000	20021010 <--

PRAI US 2001-976610 A 20011012 <--

AB This invention relates to **fertilizer encapsulation** with **polyurethanes** wherein the **isocyanate**-reactive composition contains sulfur. The process comprises applying a **polyisocyanate** composition to **fertilizer particles**, applying an **isocyanate**-reactive composition which contains sulfur to the **polyisocyanate coated fertilizer particles**, or applying an **isocyanate**-reactive composition which contains sulfur to **fertilizer particles** and then applying a **polyisocyanate** composition to the **isocyanate**-reactive **coated fertilizer particles**, and repeating these steps as necessary to form sulfur containing **polyurethane encapsulated fertilizer particles**.

IT 9016-87-9DP, reaction products with polypropylene glycol polyol derivs. and butanol 25322-69-4DP, **polyol** derivs., polymers with polymethylenepolyphenylene **isocyanate** 53862-89-8P 57047-34-4P 57214-08-1P 57214-09-2P 58718-85-7P 70520-26-2P  
RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(sulfur-containing; preparation as **coating for fertilizer encapsulation**)

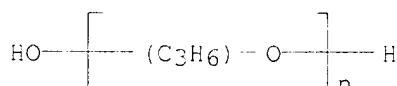
RN 9016-87-9 HCPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 25322-69-4 HCPLUS

CN Poly[cxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)



RN 53862-89-8 HCPLUS

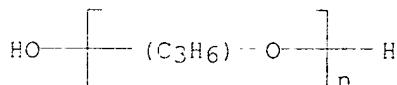
CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] (CA INDEX NAME)

CM 1

CRN 25322-69-4

CMF  $(\text{C}_3\text{H}_6\text{O})_n\text{H}_2\text{O}$

CCI IDS, PMS



CM 2

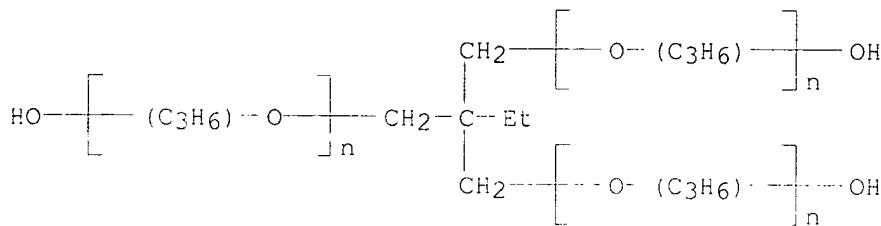
CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 57047-34-4 HCPLUS  
 CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] ether with  
 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1) (9CI) (CA INDEX NAME)

CM 1

CRN 25723-16-4  
 CMF (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> C<sub>6</sub>H<sub>14</sub>O<sub>3</sub>  
 CCI IDS, PMS



CM 2

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 57214-08-1 HCPLUS  
 CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 2,2'-(1,2-ethanediylbis(oxy))bis(ethanol) (CA INDEX NAME)

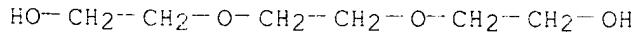
CM 1

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 112-27-6  
 CMF C<sub>6</sub>H<sub>14</sub>O<sub>4</sub>



RN 57214-09-2 HCPLUS  
 CN Ethanol, 2,2'-oxybis-, polymer with polymethylenepolyphenylene isocyanate

(9CI) (CA INDEX NAME)

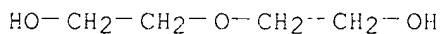
CM 1

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 111-46-6  
 CMF C4 H10 O3



RN 58718-85-7 HCAPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] ether with  
 $\beta$ -D-fructofuranosyl  $\alpha$ -D-glucopyranoside (CA INDEX NAME)

CM 1

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

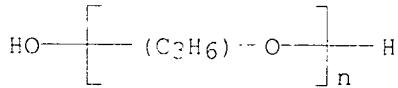
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 9049-71-2  
 CMF C12 H22 O11 . x (C3 H6 O)n H2 O

CM 3

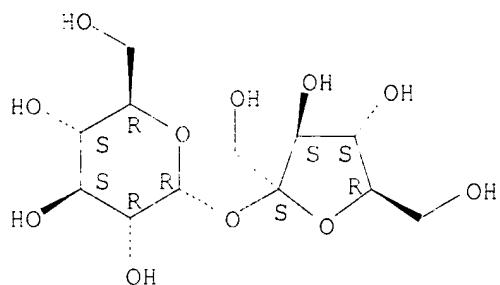
CRN 25322-69-4  
 CMF (C3 H6 O)n H2 O  
 CCI IDS, PMS



CM 4

CRN 57-50-1  
 CMF C12 H22 O11

Absolute stereochemistry.



RN 70520-26-2 HCPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 $\alpha, \alpha', \alpha''$ -(nitrilotri-2,1-ethanediyl)tris[ $\omega$ -  
 hydroxypoly[oxy(methyl-1,2-ethanediyl)]] (CA INDEX NAME)

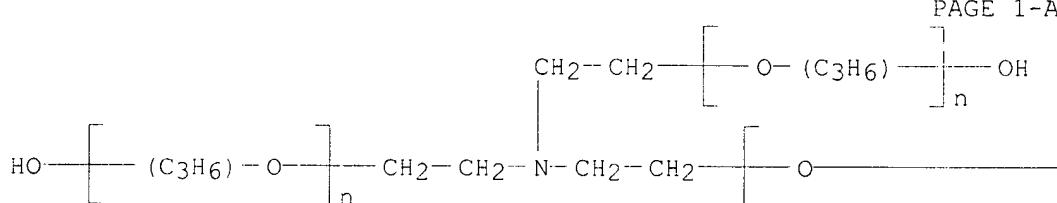
CM 1

CRN 37208-53-0

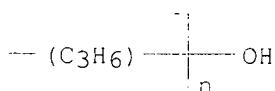
CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>15</sub> N O<sub>3</sub>

CCI 1DS, PMS

PAGE 1-A



PAGE 1-B



CM 2

CRN 9016-87-9

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File
Central Glass Co Ltd Kamatant, Y	1998			IEP 0867422 A	HCPLUS
	1983			IUS 4412072 A	HCPLUS

Macnaughtan, D	12000			US 6152981 A		HCAPLUS
Mitsubishi Chem Corp	1996			JP 08225387 A		HCAPLUS

L134 ANSWER 15 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2003:239788 HCAPLUS

DN 138:233406

TI Bioactive substances **coated** with **polyurethanes**, compositions containing them, and crop cultivation using the **coated** products or the compositions

IN Uchino, Masazumi

PA Chisso Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2003089605	A	20030328	JP 2001-281585	20010917 <--

PRAI JP 2001-281585 20010917 <--

AB Bioactive substances such as agrochems. and **fertilizers** are **coated** with **polyurethanes** prepared from reaction of tripropylene glycol with **isocyanates**. The compns. contain the above **coated** bioactive substances and **uncoated** bioactive substances. The **coated** substances have very small time-dependence of releasability and can be applicable for both cultivation in greenhouses and using mulch films, where sudden increase in temperature occurs, and cultivation in cold seasons. Urea **granules** were **coated** by adding tripropylene glycol, 2,4,6-tris(dimethylaminomethyl)phenol, and Sumidur 44V10 to give **coated** urea **fertilizer**. Times for 80% dissoln. of the **coated** **granules** in H<sub>2</sub>O at 15, 25, and 35° were 90, 85, and 110 days, resp.

IT 9016-87-9DP, Polymeric MDI, polymers with polypropylene glycol diol or triol derivs. and tripropylene glycol 25322-69-4DP, Polypropylene glycol, diol or triol derivs., polymers with polymeric MDI and tripropylene glycol 57288-55-8P

RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)

(bioactive substances **coated** with **polyurethanes** comprising tripropylene glycol and **isocyanates** showing very small temperature dependence in release behavior)

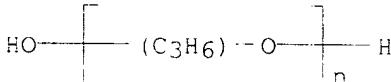
RN 9016-87-9 HCAPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 25322-69-4 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)

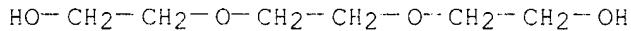


RN 57288-55-8 HCAPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with [(1-methyl-1,2-ethanediyl)bis(oxy)]bis[propanol] (CA INDEX NAME)

CM 1

CRN 24800-44-0  
 CMF C9 H20 O4  
 CCI IDS



3 ( D1-Me )

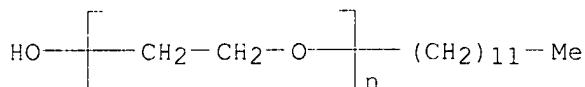
CM 2

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

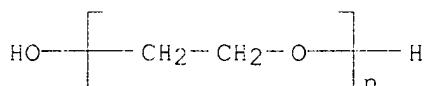
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 16 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2003:214647 HCAPLUS  
 DN 138:233417  
 TI Pesticide-containing **coated fertilizer granules** and their manufacture  
 IN Okada, Shoji  
 PA Sumitomo Chemical Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI JP 2003081705	A	20030319	JP 2001-276181	20010912 <--
PRAI JP 2001-276181		20010912 <--		
AB The <b>granules</b> comprise (a) agrochem. pesticide compds. and (b) oxyethylene compds. (d.p. $\geq 10$ , melting at 35-100°) supported on <b>fertilizer granules coated</b> with thermosetting resins. The <b>granules</b> show <b>controlled</b> initial <b>release</b> of pesticides. (E)-(S)-1-(4-chlorophenyl)-4,4-dimethyl-2-(1H-1,2,4-triazol-1-yl)pent-1-en-3-ol was dissolved into PEG 4000N, mixed with N-P2O5-K2O <b>fertilizer granules</b> , and <b>coated</b> with a composition comprising Sumidur 44V10 (polymeric MDI), Sumiphen TM (polyether <b>polyol</b> ), Sumiphen 1600U (polyether <b>polyol</b> ), and an amine catalyst to give <b>coated</b> <b>granules</b> , which showed 93.0% stability of the active ingredient after storage at 40° for 3 days.				
IT 9002-92-0, Polyoxyethylene lauryl ether				
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)				
(Pegnol ST 15; <b>coated fertilizer granules</b> containing pesticides and oxyethylene compds.)				
RN 9002-92-0 HCAPLUS				
CN Poly(oxy-1,2-ethanediyl), $\alpha$ -dodecyl- $\omega$ -hydroxy- (CA INDEX NAME)				



IT 25322-68-3, Polyethylene glycol  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (coated fertilizer granules containing  
 pesticides and oxyethylene compds.)  
 RN 25322-68-3 HCPLUS  
 CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)



IT 198131-56-5  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (coating; coated fertilizer  
 granules containing pesticides and oxyethylene compds.)  
 RN 198131-56-5 HCPLUS  
 CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 $\alpha, \alpha', \alpha''-1,2,3$ -propanetriyltris[ $\omega$ -  
 hydroxypoly{oxy(methyl-1,2-ethanediyl)}] and Sumiphen 1600U (CA INDEX  
 NAME)

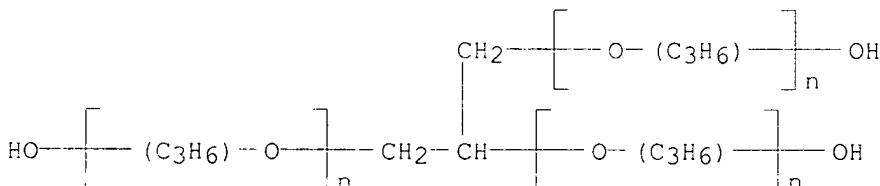
CM 1

CRN 198085-31-3  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 25791-96-2  
 CMF  $(\text{C}_3\text{H}_6\text{O})_n$   $(\text{C}_3\text{H}_6\text{O})_n$   $(\text{C}_3\text{H}_6\text{O})_n$   $\text{C}_3\text{H}_8\text{O}_3$   
 CCI IDS, PMS



CM 3

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 17 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2002:791970 HCAPLUS

DN 137:295796

TI **Microencapsulation with polyurethanes and(or) polyureas**

IN Podszun, Wolfgang; Krueger, Joachim; Probst, Joachim

PA Bayer AG, Germany

SO Ger. Offen., 8 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10117784	A1	20021017	DE 2001-10117784	20010410 <--
	CA 2443682	A1	20021024	CA 2002-2443682	20020402 <--
	WO 2002083290	A1	20021024	WO 2002-EP3617	20020402 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002244761	A1	20021028	AU 2002-244761	20020402 <--
	EP 1379328	A1	20040114	EP 2002-712964	20020402 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	BR 2002008797	A	20040309	BR 2002-8797	20020402 <--
	CN 1501837	A	20040602	CN 2002-808106	20020402 <--
	JP 2004535276	T	20041125	JP 2002-581087	20020402 <--
	US 2004115280	A1	20040617	US 2003-474123	20031006 <--
	MX 2003PA09229	A	20040129	MX 2003-PA9229	20031009 <--

PRAI DE 2001-10117784 A 20010410 &lt;--

WO 2002-EP3617 W 20020402 &lt;--

AB Highly stable **microcapsules** are manufactured by **encapsulation** of solid active substances in an aqueous dispersion in which  $\geq 1$  **polyisocyanate** is reacted with  $\geq 1$  **polyol** and(or) polyamine. Typical active substances are drugs, agrochems., perfumes, leucodyes, fireproofing agents, and adhesives.

IT 822-06-0DP, HDI, **isocyanurate**- and allophanate-containing **polyisocyanate**, polymers with acrylic **polyols**  
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
 (microencapsulation with **polyurethanes** and(or)  
 polyureas of active substances)

RN 822-06-0 HCAPLUS

CN Hexane, 1,6-diisocyanato- (CA INDEX NAME)

OCN-(CH<sub>2</sub>)<sub>6</sub>-NCO

L134 ANSWER 18 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

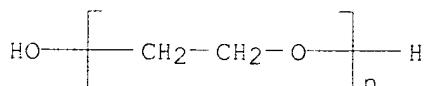
AN 2002:773610 HCAPLUS

DN 137:258841  
 TI Polymeric **coatings** for seeds or embryos  
 PA Incotec International B.V., Neth.  
 SO Eur. Pat. Appl., 24 pp.  
 CODEN: EPXXDW

DT **Patent**  
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1247436	A1	20021009	EP 2001-201213	20010402 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	WO 2002078421	A1	20021010	WO 2002-NL210	20020402 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GE, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002246461	A1	20021015	AU 2002-246461	20020402 <--
FRAI	EP 2001-201213	A	20010402 <--		
	WO 2002-NL210	W	20020402 <--		
AB	A method for <b>coating</b> seeds and/or embryos with a polymeric envelope is characterized by using an organic solvent in an essential anhydrous polymerization reaction. The polymeric envelope comprises at least one additive selected from pesticides, plant growth regulators, fillers and fertilizers.				
IT	25322-68-3D, Polyethylene glycol, reaction products with <b>isocyanates</b> RL: AGR (Agricultural use); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses) (polymeric <b>coatings</b> for seeds or embryos comprising)				
RN	25322-68-3 HCPLUS				
CN	Poly(oxy-1,2-ethanediyl), $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)				



## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File
Charles, N	1988			IUS 4780987 A	
Ignace, G	1988			IUS 4735017 A	
Ignace, G	1991			IUS 5044116 A	
Keith, R	1986			IUS 4562663 A	
Porter, F	1974			IUS 3808740 A	HCPLUS

L134 ANSWER 19 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

AN 2002:47546 HCPLUS

DN 136:101836

TI Slow-release polyurethane-

**encapsulated fertilizer** produced by process using oleo  
**polyols**

IN Markusch, Peter H.; Cline, Robert L.; Sarpeshkar, Ashok M.  
 PA Bayer Corporation, USA  
 SO Eur. Pat. Appl., 10 pp.  
 CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1172347	A2	20020116	EP 2001-114816	20010627 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6358296	B1	20020319	US 2000-613680	20000711 <--
	CA 2352442	A1	20020111	CA 2001-2352442	20010705 <--
	MX 2001PA06872	A	20020806	MX 2001-PA6872	20010705 <--
	JP 2002114591	A	20020416	JP 2001-207716	20010709 <--
PRAI	US 2000-613680	A	20000711 <--		

AB **Polyurethane-encapsulated fertilizer**  
**particles** which exhibit **slow-release**  
 properties are produced by a process comprising (1) applying an  
**isocyanate-reactive component** or a **polyisocyanate**  
 component to **fertilizer particles**, to form  
**coated fertilizer particles**, followed by (2)  
 applying a **polyisocyanate component** or an **isocyanate**  
**-reactive component** onto the **coated fertilizer**  
**particles** to form **polyurethane-encapsulated**  
**fertilizer particles**, and, optionally, repeating these  
 steps as many times as necessary to form **polyurethane-**  
**encapsulated fertilizer particles** that contain  
 about 2 to 20% by weight of **polyurethane**, based on the total weight of  
 the **encapsulated fertilizer particles**.

Alternatively, the **isocyanate-reactive component** and the  
**polyisocyanate component** can be premixed prior to being applied to  
 the **fertilizer particles** to form **polyurethane**  
**-encapsulated fertilizer particles**.

Suitable **isocyanate-reactive components** comprise oleochem.  
**polyols**. Thus, when urea pellets (100 g) were  
**encapsulated** with Sovernol 815 (1.36 g) and a  
 polymethylenepolyphenylene **isocyanate** (0.72 g) with Dabco T-12  
 (0.0027 g) as catalyst to achieve 5.16% **polyurethane**  
**encapsulation**, 30.16% of the urea dissolved after 8 h in water,  
 whereas 90.2% of urea dissolved from **uncoated** pellets.

IT 9016-87-9D, polymers with castor oil 58718-85-7

RL: AGR (Agricultural use); PEP (Physical, engineering or chemical  
 process); PYP (Physical process); BIOL (Biological study); PROC (Process);  
 USES (Uses)

(**slow-release polyurethane-**  
**encapsulated fertilizer** production with oleochem.  
**polyols**)

RN 9016-87-9 HCPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 58718-85-7 HCPLUS

CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] ether with  
 $\beta$ -D-fructofuranosyl  $\alpha$ -D-glucopyranoside (CA INDEX NAME)

CM 1

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

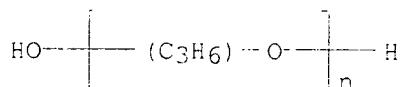
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 9049-71-2  
 CMF C12 H22 O11 . x (C3 H6 O)n H2 O

CM 3

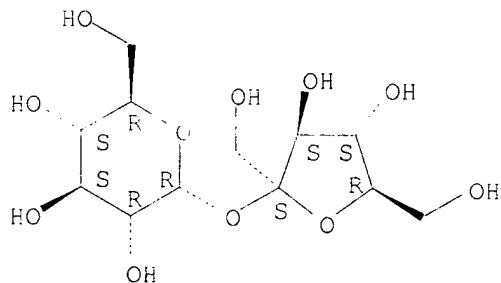
CRN 25322-69-4  
 CMF (C3 H6 O)n H2 O  
 CCI IDS, PMS



CM 4

CRN 57-50-1  
 CMF C12 H22 O11

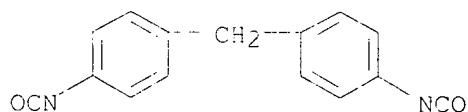
Absolute stereochemistry.



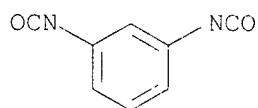
L134 ANSWER 20 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2002:10393 HCAPLUS  
 DN 136:53219  
 TI **Controlled-release coated fertilizer**  
 IN Geiger, Albert J.; Stelmack, Eugene G.; Babiak, Nicolette M.  
 PA Agrium Inc., Can.  
 SO PCT Int. Appl., 23 pp.  
 CODEN: PIIXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
PI WO 2002000573	A2	20020103	WO 2001-CA923	20010627 <--

WO 2002000573 A3 20020801  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,  
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,  
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,  
 UZ, VN, YU, ZA, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,  
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,  
 BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
 US 6663686 B1 20031216 US 2000-604161 20000627 <--  
 CA 2412532 A1 20020103 CA 2001-2412532 20010627 <--  
 CA 2412532 C 20080122  
 EP 1299323 A2 20030409 EP 2001-944843 20010627 <--  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
 JP 2004501855 T 20040122 JP 2002-505324 20010627 <--  
 US 2004045331 A1 20040311 US 2003-659432 20030911 <--  
 PRAI US 2000-604161 A 20000627 <--  
 WO 2001-CA923 W 20010627 <--  
 AB A **controlled release fertilizer** comprising a  
 particulate plant nutrient surrounded by a **coating** which  
 is the reaction product of a mixture comprising a **polyol**, an  
**isocyanate** and an organic wax.  
 IT 101-68-8D, Diphenylmethane **diisocyanate**, reaction  
 products with **polyols** and organic waxes 26471-62-5D,  
 Toluene **diisocyanate**, reaction products with **polyols**  
 and organic waxes  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (controlled-release coated  
 fertilizer)  
 RN 101-68-8 HCPLUS  
 CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



RN 26471-62-5 HCPLUS  
 CN Benzene, 1,3-diisocyanatomethyl- (CA INDEX NAME)



D1-Me

L134 ANSWER 21 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 2001:855712 HCPLUS  
 DN 135:357452  
 TI Coating of fertilizer granules containing

IN polymeric water-absorbents  
 IN Tabei, Nobuaki; Saito, Noriaki; Endo, Kazuhisa  
 PA Sumitomo Chemical Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

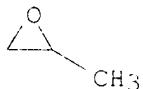
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001326891	A	20011127	JP 2001-66313	20010309 <--
US 6358295	B1	20020319	US 2001-798905	20010306 <--
FRAI JP 2000-72015	A	20000315 <--		

AB A highly water-absorbing substance is added to **fertilizer granules**, and these **granules** are **coated** with  $\geq 1$  layer with **urethane** polymers. The **fertilizer** produces little residues floating on the surface of water when it is applied to flooded rice paddies. It releases active **fertilizer** components in a short time. The absorbents are, for example, acrylic polymers, isobutylene polymers, and starch derivs.

IT 9003-11-6, Ethylene oxide-propylene oxide copolymer  
 25322-68-3, Ethylene oxide polymer 25322-68-3D,  
 Poly(ethylene oxide), derivs. 25322-69-4  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (coating of **fertilizer granules** containing polymeric water-absorbents)

RN 9003-11-6 HCPLUS  
 CN Oxirane, 2-methyl-, polymer with oxirane (CA INDEX NAME)

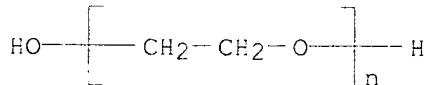
CM 1

CRN 75-56-9  
CMF C3 H6 O

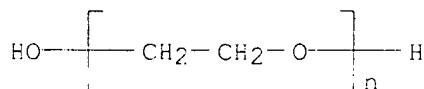
CM 2

CRN 75-21-8  
CMF C2 H4 O

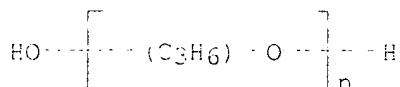
RN 25322-68-3 HCPLUS  
 CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)



RN 25322-68-3 HCAPLUS  
 CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)



RN 25322-69-4 HCAPLUS  
 CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)



L134 ANSWER 22 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2001:432906 HCAPLUS  
 DN 135:47219

TI **Polyurethane encapsulated fertilizer** having improved slow-release properties  
 IN Markusch, Peter H.; Cline, Robert L.; Sarpeshkar, Ashok M.; Yeater, Robert P.

PA Bayer Corporation, USA

SO Eur. Pat. Appl., 19 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1106635	A2	20010613	EP 2000-125299	20001128 <--
	EP 1106635	A3	20011219		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6364925	B1	20020402	US 1999-458818	19991210 <--
	CA 2327736	A1	20010610	CA 2000-2327736	20001206 <--
	JP 2001213685	A	20010807	JP 2000-372789	20001207 <--
PRAI	US 1999-458818	A	19991210 <--		

AB The present invention relates to **polyurethane encapsulated fertilizer particles** which exhibit slow-release properties and to a process for their production. The process comprises applying an **isocyanate**-reactive component to **fertilizer particles**, to form **fertilizer particles** coated with an **isocyanate**-reactive component, applying a **polyisocyanate** component onto the **coated fertilizer particles** to form **polyurethane encapsulated fertilizer particles**, and, optionally, repeating these steps as many times as necessary to form the **polyurethane encapsulated fertilizer particles** that contain about 2-20% by weight of **polyurethane**, based on the total weight of the **encapsulated fertilizer particles**. Suitable **isocyanate**-reactive components include polyesterether **polyols** that

comprise either a blend of or the reaction product of (i) castor oil having an OH number of about 160-170, a viscosity of about 500-900

mPa·s at 25°, and a water content of less than 0.5% by weight; and (ii) a polyether **polyol** having an OH number 28-700, a functionality 3-8, and a mol. weight of about 240-6,000, and a viscosity about 50-35,000 mPa·s at 25°. The polyether **polyol** must be prepared from a suitable initiator compound and an alkylene oxide comprising at least 70% by weight of PEO.

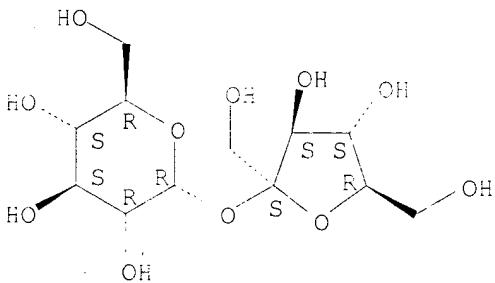
IT 57-50-1DP, Sucrose, **polyetherpolyol**, polymers with **polyetherpolyol**, urea and polymethylene **polyphenylisocyanate** 75-56-9DP, Propylene oxide, **polyetherpolyol**, polymers with **polyetherpolyol**, urea and polymethylene **polyphenylisocyanate** 9016-87-9DP, Polymethylene **polyphenylisocyanate**, polymers with **polyetherpolyol** and urea 9051-49-4DP, Propoxylated pentaerythritol, reaction products with castor oil, polymers with **polyetherpolyol**, urea and polymethylene **polyphenylisocyanate** 25723-16-4DP, Propoxylated trimethylolpropane, reaction products with castor oil, polymers with **polyetherpolyol**, urea and polymethylene **polyphenylisocyanate** 37208-53-0DP, Propoxylated triethanolamine (3:1), polymers with **polyetherpolyol**, urea and polymethylene **polyphenylisocyanate** 52625-13-5DP, Propoxylated sorbitol, reaction products with castor oil, polymers with **polyetherpolyol**, urea and polymethylene **polyphenylisocyanate**

RL: AGR (Agricultural use); IMF (Industrial manufacture); BIOL (Biological study); PREP (Preparation); USES (Uses)

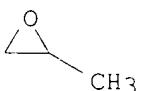
(polyurethane-encapsulated fertilizer  
having improved slow-release properties)

RN 57-50-1 HCPLUS  
CN α-D-Glucopyranoside, β-D-fructofuranosyl (CA INDEX NAME)

Absolute stereochemistry.



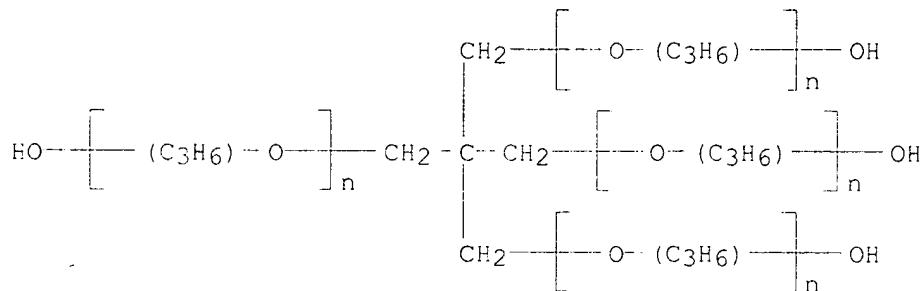
RN 75-56-9 HCPLUS  
CN Oxirane, 2-methyl- (CA INDEX NAME)



RN 9016-87-9 HCPLUS  
CN Isocyanic acid, polymethylene polyphenylene ester (CA INDEX NAME)

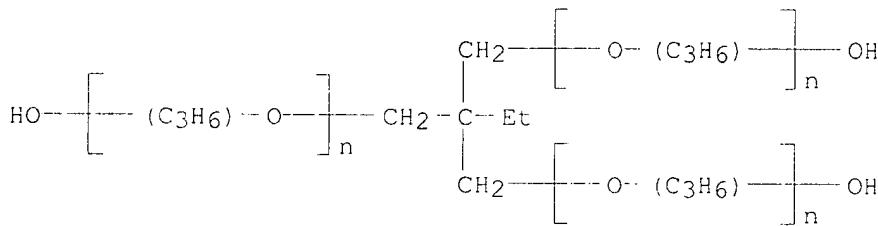
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
RN 9051-49-4 HCPLUS  
CN Poly[oxy(methyl-1,2-ethanediyl)], α-hydro-ω-hydroxy-, ether

with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1) (CA INDEX NAME)



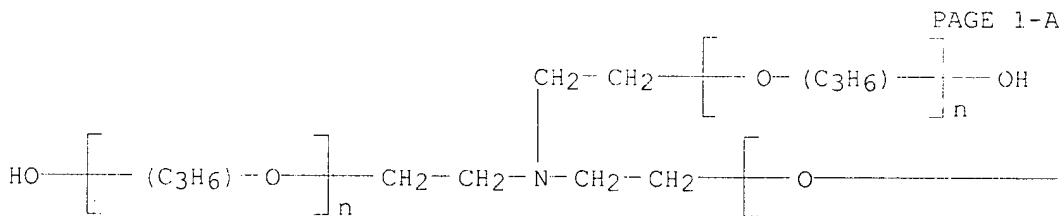
RN 25723-16-4 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1) (CA INDEX NAME)

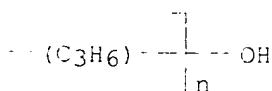


RN 37208-53-0 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha,\alpha',\alpha''$ -(nitrilotri-2,1-ethanediyl)tris( $\omega$ -hydroxy- (CA INDEX NAME)

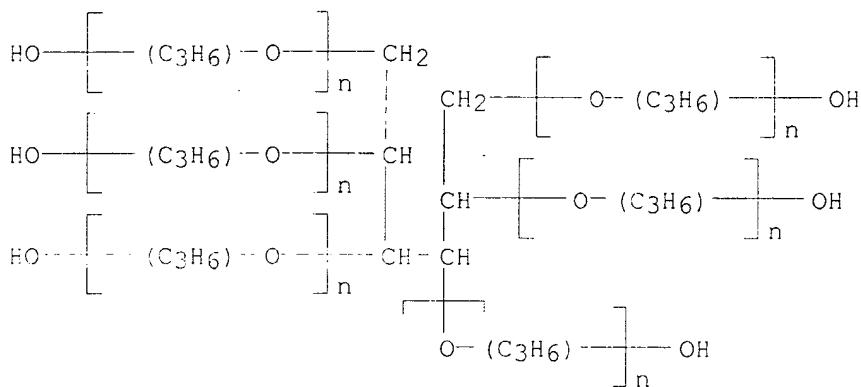


PAGE 1-B



RN 52625-13-5 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy-, ether with D-glucitol (6:1) (CA INDEX NAME)



L134 ANSWER 23 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 2000:121777 HCPLUS

DN 132:167411

TI Polymeric films coated with moisture-absorbing polymers for agricultural use

IN Machida, Toshimi; Kikuiri, Nobuyuki

PA Achilles Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

## LA Japanese

FAN.CNT 1

PATENT NO

### APPENDIX NO. 1

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PI JP 2000052496 A 20000222 JP 1998-221457 19980805 <--  
JP 3990040 B2 20071010  
PRAI JP 1998-221457 19980805 <--  
AB The films are coated with moisture-absorbing polymers at the

AB The films are **coated** with moisture-absorbing polymers at the inner surface. Thus, a 0.1-mm PVC-based film containing di-2-ethylhexyl phthalate 50, polyoxyethylene nonylphenyl ether 0.2, and other additives 8 phr was **coated** with an aqueous **coating** containing Adeka Bon-Tighter HUX 401 (**polyurethane** emulsion) 100, Aqua Calk (crosslinked polyoxyalkylene-based moisture-absorbing polymer) 2, Adeka Bon-Tighter HUX-XW 2 (crosslinking agent) 6, and H2O 200 parts and dried at 90° for 1 min to give a film with good dripping and scratch resistance.

IT 9016-45-9. Polyoxethylene nonylphenyl ether

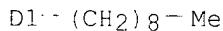
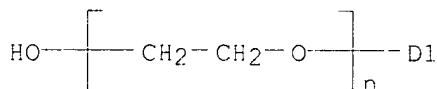
RL: AGR (Agricultural use): MOA (Modifier or additive use): PRP

RE: AGO (Agricultural use); MOA (Modified or additive use); TME (Properties); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)

(base film containing; polymeric films **coated** with moisture-absorbing polymers for agricultural use)

RN 9016-45-9 HCAPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -(nonylphenyl)- $\omega$ -hydroxy- (CA INDEX NAME)



L134 ANSWER 24 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 2000:106847 HCPLUS

DN 132:151198

TI Thermosetting resin-coated controlled-release  
 granular fertilizers and their manufacture

IN Hirano, Yasuhiro; Yamaguchi, Hiroshi; Nakamura, Hiroshi

PA Sumitomo Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000044377	A	20000215	JP 1999-140293	19990520 <--
	US 6231635	B1	20010515	US 1999-313985	19990519 <--
	CA 2272480	A1	19991122	CA 1999-2272480	19990520 <--
	AU 9930152	A	19991202	AU 1999-30152	19990520 <--
	AU 745527	B2	20020321		

PRAI JP 1998-141549 A 19980522 <--

AB The granular fertilizers coated with  
 thermosetting resins and containing hydrophobic compds. in the  
 fertilizer parts and/or coating layers, are manufactured  
 Urea granules coated with 6 weight% (based on urea)  
 polyurethane from polymeric MDI (Sumidur 44V10) and a branched  
 polyether polyol (Sumiphene TM) mixed with 5 parts (based on 100  
 parts polymer) polyethylene wax (Neowax CL 70) showed 72% release of urea  
 in H<sub>2</sub>O at 25° within 174 days.

IT 57029-46-6P

RL: AGR (Agricultural use); PNU (Preparation, unclassified); BIOL  
 (Biological study); PREP (Preparation); USES (Uses)  
 (thermosetting resin-coated controlled-  
 release granular fertilizers containing  
 hydrophobic compds.)

RN 57029-46-6 HCPLUS

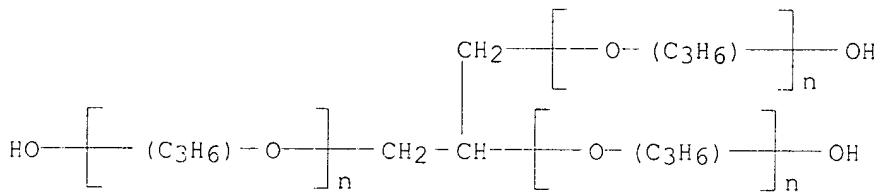
CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 $\alpha, \alpha', \alpha''-1,2,3\text{-propanetriyltris}[\omega\text{-}$   
 $\text{hydroxypoly}[\text{oxy}(\text{methyl-1,2-ethanediyl})]]$  (CA INDEX NAME)

CM 1

CRN 25791-96-2

CMF (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> (C<sub>3</sub>H<sub>6</sub>O)<sub>n</sub> C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>

CCI IDS, PMS



CM 2

CRN 9016-87-9  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 25 OF 46 HCAPLUS COPYRIGHT 2008 ACS on ST  
AN 2000:19396 HCAPLUS

DN 132:65506

TI Biodegradable polyurethane coating materials and

water-soluble or -absorbing solid

IN Hatakeyama, Hyoe; Hirose, Shigeo

PA Agency of Industrial Sciences

SO Jpn. Kokai To

CODEN:

DT Patent

LA Japa

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000001646	A	20000107	JP 1998-181650	19980612 <--

JP 3163540 B2 20010508  
FRAT JP 1998-181650 19980612 <--  
AB The materials, useful as **coatings for fertilizers**,  
fabrics, etc., contain **urethane** prepolymers (d.p. 10-90) manufactured  
from **polyisocyanates** and **polyhydric** alcs. containing  
0.5-90% molasses and/or sugars. Thus, polyethylene glycol containing 13%  
molasses was polymerized with crude MDI, applied to a glass substrate, and  
cured to give a film showing  $T_g$  49.5°, thermal decomposition temperature  
310.1°, and degradability on treating with lipase.

IT 57636-09-6P, Crude MDI-polyethylene glycol copolymer  
RL: AGR (Agricultural use); IMF (Industrial manufacture); PRP  
(Properties); TEM (Technical or engineered material use); BIOL (Biological  
study); PREP (Preparation); USES (Uses)  
(biodegradable coatings containing polyurethanes containing

molasses or sugars)

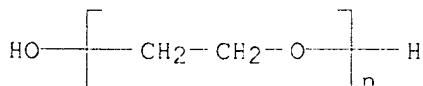
RN 57636-09-6 HCAPLUS  
CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
α-hydro-α-hydroxypoly(oxo 1,3-oxapadiene) (CA INDEX NAME)

GM 1

CBN 25322 68 3

CRN 25322-68-3  
CME (C3 H4 O) = H3 O

CME (C2)  
CCT RMS



CM 2

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 26 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1999:330964 HCAPLUS

DN 131:33059

TI Synthetic resin-based films with **coating** layers for agricultural covering materials

IN Takano, Tadahiro; Machida, Toshimi

PA Achilles Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 11137097 A 19990525 JP 1997-330968

19971114 &lt;--

PRAI JP 1997-330968 19971114 &lt;--

AB Title films consist of synthetic resin-based supports and weather-resistant and antifogging surface layers containing water-thinned **coatings**, colloidal silica having average **particle** diameter 1-200 nm, hindered amine emulsions, and silicone-type surfactants on  $\geq 1$  side. The films show lasting weatherability and antifogging effect in use as covering materials for agriculture, e.g., greenhouse. Thus, a PVC film was gravure-**coated** with a composition of **polyurethane** emulsion (Bon-Tighter HUX 232) 100, colloidal silica 100, hindered amine emulsion (Sanduvor 3051) 2, a crosslinking agent (Bon-Tighter UUX-XW 2) 6, and a silicone-type surfactant (NUC Silicone L 77) 0.1 part and dried at 90° for 1 min to give title film showing retention of antifogging effect in 12-mo use as greenhouse covering.

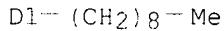
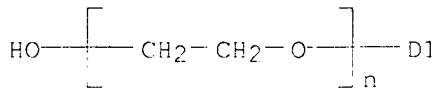
IT 9016-45-9, Polyethylene glycol nonylphenyl ether

RL: MOA (Modifier or additive use); USES (Uses)

(synthetic resin films with weather-resistant antifogging water-thinned **coatings** for agricultural covering materials)

RN 9016-45-9 HCAPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -(nonylphenyl)- $\omega$ -hydroxy- (CA INDEX NAME)



L134 ANSWER 27 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1999:267316 HCAPLUS

DN 130:296139

TI **Controlled-release fertilizers and fertilization using them**

IN Ando, Seinosuke; Yoshiwara, Hideo

PA Coop Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11116372	A	19990427	JP 1997-299680	19971017 <--
PRAI JP 1997-299680		19971017		

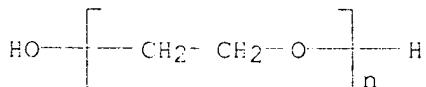
AB The **fertilizers** are wrapped with molded products comprising microporous materials or **coating** materials for **controlled release**. Also claimed is a **fertilization** method by directly applying the **fertilizers** to field, e.g. paddy, pasture, protected horticulture field, etc. A **polyurethane-coated** waterproof nylon fabric sheet bag was packed with a powdery **fertilizer** (containing ammonium phosphate, urea, K, and gypsum) and applied to a Welsh onion field to show higher growth-promoting effect than a **control granular fertilizer** with the same composition

IT 25322-68-3, Polyethylene glycol

RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses) (controlled-release fertilizers packaged with porous materials or coating materials)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -hydro- $\omega$ -hydroxy- (CA INDEX NAME)



L134 ANSWER 28 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1998:787154 HCAPLUS

DN 130:99918

TI Effect of chemical structure on the biodegradation of

AU polyurethanes under composting conditions  
 Kim, Young Duk; Kim, Sung Chul  
 CS Department of Chemical Engineering, Korea Advanced Institute of Science  
 and Technology, Taejon, 305-701, S. Korea  
 SO Polymer Degradation and Stability (1998), 62(2), 343-352  
 CODEN: PDSTDW; ISSN: 0141-3910  
 PB Elsevier Science Ltd.  
 DT Journal  
 LA English  
 AB Polyester-polyurethanes having different chemical structure were  
 synthesized and their biodegradabilities were investigated. Average mol.  
 weight

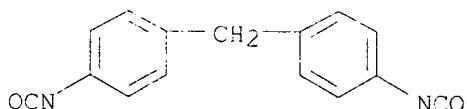
of the synthesized polyurethanes ranged from 79 106 to 161 715  
 (Mw) by gel permeation chromatog. Degradation expts. were conducted by:  
 hydrolytic degradation in NaOH solution; enzymic degradation by lipase; and  
 composting. Hydrolytic and enzymic degradation decreased with the increase of  
 the diol carbon chains in polyol, and increased by substituting  
 aromatic diisocyanate with aliphatic diisocyanate. It is  
 considered that hydrophobicity and hard segment formation seem to resist  
 the hydrolytic and enzymic degradation of polyurethanes.

Synthesized polyurethanes were biodegradable under composting  
 condition to a certain extent depending on their chemical structures. As the  
 hard segment content was increased, biodegrdn. rate decreased. Biodegrdn.  
 rate of polyurethanes increased with the following order of  
 diisocyanate used: MDI<H12MDI<HDI. Polyurethane  
 composed of aliphatic diisocyanate showed higher biodegrdn. rate  
 than polyurethane composed of aromatic diisocyanate.

These facts indicate that the presence and content of hard segment in  
 polyurethane effect the biodegradability under composting  
 condition. As the diol carbon chains of polyol increased,  
 biodegrdn. rate under composting condition increased. When the  
 polyol used is poly(hexamethylene adipate)diol of  
 poly(caprolactone)diol, polyurethane showed maximum biodegrdn. rate  
 under composting condition. Surface hydrophobicity, which is related to  
 good adhesion of bacteria on the polymer surface, is considered to be a  
 factor on biodegrdn. rate under composting condition.

IT 101-68-8D, Mdi, polymers with polycaprolactone diol  
 25931-01-5, Adipic acid-ethylene glycol-MDI copolymer  
 26375-23-5, Adipic acid-1,4-butanediol-mdi copolymer  
 31075-20-4 219319-53-6  
 RL: POL (Pollutant); REM (Removal or disposal); OCCU (Occurrence); PROC  
 (Process)  
 (effect of chemical structure on biodegrdn. of polyurethanes  
 under composting conditions)

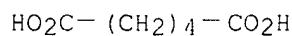
RN 101-68-8 HCPLUS  
 CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



RN 25931-01-5 HCPLUS  
 CN Hexanedioic acid, polymer with 1,2-ethanediol and 1,1'-methylenebis[4-isocyanatobenzene] (CA INDEX NAME)

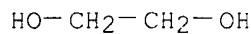
CM 1

CRN 124-04-9  
 CMF C6 H10 O4



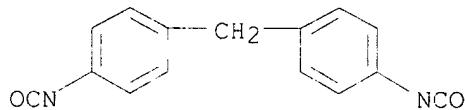
CM 2

CRN 107-21-1  
 CMF C2 H6 O2



CM 3

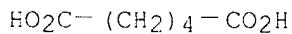
CRN 101-68-8  
 CMF C15 H10 N2 O2



RN 26375-23-5 HCAPLUS  
 CN Hexanedioic acid, polymer with 1,4-butanediol and 1,1'-methylenebis[4-isocyanatobenzene] (CA INDEX NAME)

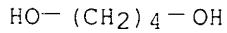
CM 1

CRN 124-04-9  
 CMF C6 H10 O4



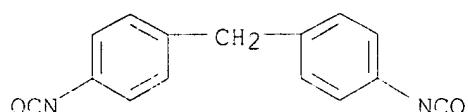
CM 2

CRN 110-63-4  
 CMF C4 H10 O2



CM 3

CRN 101-68-8  
 CMF C15 H10 N2 O2



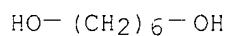
RN 31075-20-4 HCAPLUS

CN Hexanedioic acid, polymer with 1,6-hexanediol and 1,1'-methylenebis[4-isocyanatobenzene] (CA INDEX NAME)

CM 1

CRN 629-11-8

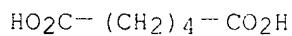
CMF C6 H14 O2



CM 2

CRN 124-04-9

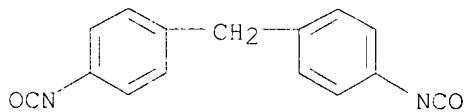
CMF C6 H10 O4



CM 3

CRN 101-68-8

CMF C15 H10 N2 O2



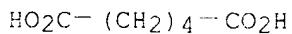
RN 219319-53-6 HCAPLUS

CN Hexanedioic acid, polymer with 1,10-decanediol and 1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 124-04-9

CMF C6 H10 O4



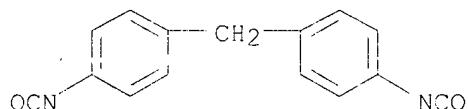
CM 2

CRN 112-47-0

CMF C10 H22 O2

HO—(CH<sub>2</sub>)<sub>10</sub>—OH

CM 3

CRN 101-68-8  
CMF C15 H10 N2 O2

## RETABLE

Referenced Author (RAU)	Year (R PY)	VOL (R VL)	PG (R PG)	Referenced Work (RWK)	Referenced File
Bitritto, M	1979	35	405	J Appl Polym Sci	HCAPLUS
Bloembergen, S	1994			Biodegradable Plasti	
Darby, R	1968	16	900	Appl Microbiol	HCAPLUS
Dee, L	1980	52	572	Anal Chem	HCAPLUS
Dibenedetto, L	1987	57	404	Polym Mater Sci Eng	HCAPLUS
Gardner, R	1994	52	1477	J Appl Polym Sci	HCAPLUS
Gerson, D	1979	106	29	ACS Symp Ser	HCAPLUS
Good, R	1977	59	398	J Colloid Interface	HCAPLUS
Gu, J	1993	1	143	J Environ Polym Degr	HCAPLUS
Gu, J	1994	2	129	J Environ Polym Degr	HCAPLUS
Hepburn, C				Polyurethane Elastom	
Huang, S	1981	172	471	ACS Symp Ser	HCAPLUS
Huang, S	1992		147	Biodegradable Polyme	
Huang, S	1985	1	61	J Bioact Compat Poly	
Itavaara, M	1996	4	29	J Environ Polym Degr	HCAPLUS
Kaplan, A	1968	9	201	Developments in Indu	
Marshall, K			133	Bacterial Adhesion	
Mergaert, J	1994	2	177	J Environ Polym Degr	HCAPLUS
Ossefort, Z	1966	39	1308	Rubber Chem Technol	HCAPLUS
Fringle, J	1983		811	Appl Environ Micro	
Tokiwa, Y	1988	52	1937	Agric Biol Chem	HCAPLUS
Tokiwa, Y	1977	270	76	Nature	
Wiencek, K	1992		99	Biofilms-Science and	
Zisman, W	1964	43	1	Adv Chem Ser	HCAPLUS

L134 ANSWER 29 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1998:786165 HCAPLUS

DN 130:37852

TI Coating agents for granular fertilizers and  
controlled-release coated granular  
fertilizers

IN Ota, Yoshihisa

PA Sanyo Chemical Industries Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

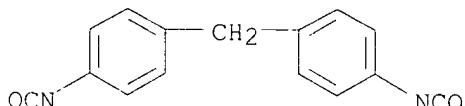
CODEN: JKXXAF

DT Patent

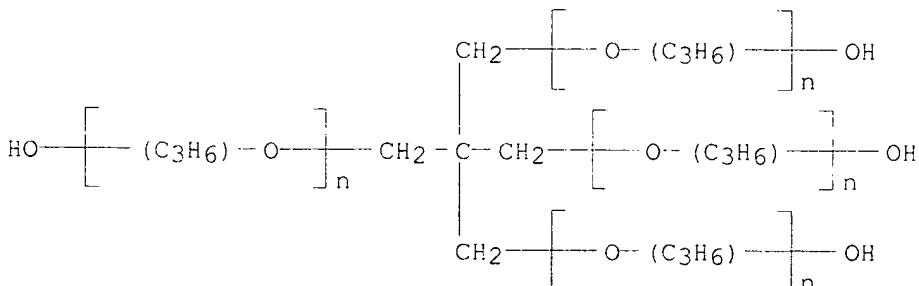
LA Japanese

FAN.CNT 1

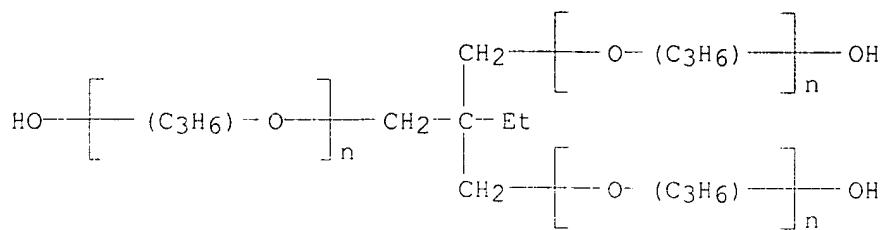
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10324587	A	19981208	JP 1997-152817	19970526 <--
JP 3161997	B2	20010425		
PRAI JP 1997-152817		19970526 <--		
AB	<p>The title <b>coating</b> agents comprise <b>polyurethanes</b> containing 0.5-20 weight% C3-12 oxyalkylene groups and 1-10 weight% ester linkages from <b>polyols</b> and <b>polyisocyanates</b>. The <b>coating</b> films after release of <b>fertilizer</b> components are decomposed by hydrolysis with acids or alkalies in soil. A <b>granular fertilizer</b> containing (NH4)2SO4 (I) was spray-coated with a 560:440 (by weight) mixture of castor oil and reaction products of glycerin-propylene oxide adduct and MDI and cured to give a <b>coated fertilizer</b> (<b>coating</b> ratio 6 weight%). The rates of release of I from the <b>coated fertilizer</b> in H2O at 25° were 13.0, 30.2, 56.7, and 82.3% within 2, 3, 4, and 5 mo, resp.</p> <p>IT 101-68-8DP, MDI, polymers with castor oil and <b>polyols</b>  9051-49-4DP, Polypropylene glycol Pentaerythritol ether, polymers with castor oil and MDI 25723-16-4DP, Polypropylene glycol trimethylolpropane ether, polymers with castor oil and MDI 25791-96-2DP, Polypropylene glycol glycerin ether, polymers with castor oil and MDI 51178-86-0DP, Polypropylene glycol ethylenediamine ether, polymers with castor oil and MDI  RL: AGR (Agricultural use); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); BIOL (Biological study); PREF (Preparation); PROC (Process); USES (Uses)  (coating agents for <b>granular fertilizers</b> and <b>controlled-release coated granular fertilizers</b>)</p>			
RN 101-68-8 HCAPLUS				
CN Benzene, 1,1'-methylenebis[4-isocyanato-			(CA INDEX NAME)	



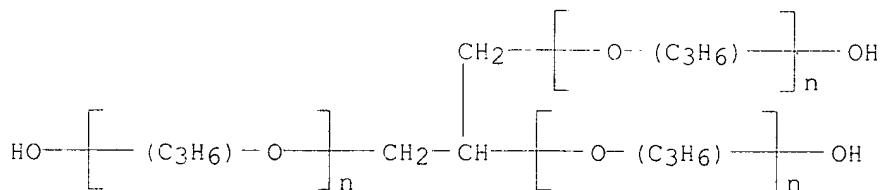
RN 9051-49-4 HCAPLUS  
CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy-, ether with 2,2-bis(hydroxymethyl)-1,3-propanediol (4:1) (CA INDEX NAME)



RN 25723-16-4 HCAPLUS  
CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1) (CA INDEX NAME)



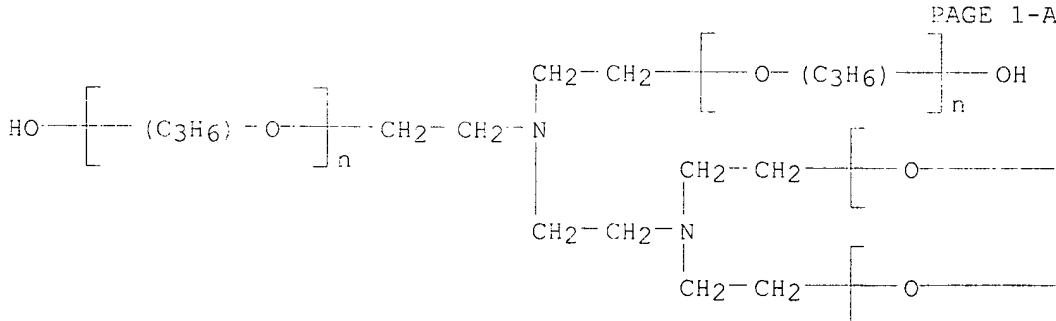
RN 25791-96-2 HCAPLUS

CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha,\alpha',\alpha''-1,2,3$ -propanetriyltris( $\omega$ -hydroxy- (CA INDEX NAME)

RN 51178-86-0 HCAPLUS

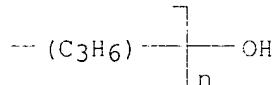
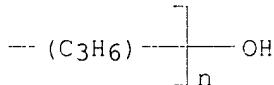
CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha,\alpha',\alpha'',\alpha'''-$ [1,2-ethanediylbis[nitrilobis(methyl-2,1-ethanediyl)])]tetrakis( $\omega$ -hydroxy- (CA INDEX NAME)

PAGE 1-A



4 ( D1-Me )

PAGE 1-B



L134 ANSWER 30 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1998:653702 HCAPLUS  
 DN 129:275375  
 TI **Polyurethane-coated granular fertilizer**  
 IN Komoriya, Haruhiko; Maeda, Kazuhiko; Shiota, Masayuki; Hirashima, Yoshi; Tsutsumi, Kentaro; Ootani, Mikio; Ikeda, Yukio  
 PA CENTRAL GLASS COMPANY, LIMITED, Japan  
 SO Eur. Pat. Appl., 15 pp.  
 CODEN: EPXXDW

DT **Patent**

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 867422	A2	19980930	EP 1998-105417	19980325 <--
	EP 867422	A3	19991013		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 10265288	A	19981006	JP 1997-73230	19970326 <--
	JP 10291881	A	19981104	JP 1997-97622	19970415 <--
	JP 3496798	B2	20040216		
	NO 9801350	A	19980928	NO 1998-1350	19980325 <--
	US 6176891	B1	20010123	US 1998-48111	19980326 <--
	TW 442448	B	20010623	TW 1998-87104758	19980326 <--
	US 6322606	B1	20011127	US 2000-665123	20000920 <--

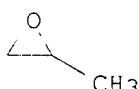
PRAI JP 1997-73230 A 19970326 <--  
 JP 1997-97622 A 19970415 <--  
 US 1998-48111 A3 19980326 <--  
 AB The invention relates to a **coated granular fertilizer** having a film covering **fertilizer granules**. This film comprises a **polyurethane resin** prepared by a method comprising the steps of (a) reacting an aromatic **polyisocyanate** with a first **polyol** component (i.e., **castor oil** or a **castor oil derivative**), thereby to obtain a prepolymer having terminal **isocyanate** groups in the mol.; and (b) reacting the prepolymer with a second **polyol** component (i.e., **castor oil** or a **castor oil derivative**) and a third **polyol** component which is an amine having at least two hydroxyl groups in the mol., thereby to cure the prepolymer and thus to prepare the **polyurethane resin**. The invention relates to another **coated granular fertilizer** having a film covering **fertilizer granules**. This film comprises a **urethane resin** and aqueous-fluid-absorbing **particles** having

a particle diameter of from 1 to 200  $\mu\text{m}$ . This **urethane** resin may be the above **polyurethane** resin. This **coated granular fertilizer** can be produced by a method comprising the steps of (a) applying an aromatic **polyisocyanate**, a **polyol** component (i.e., castor oil or a castor oil derivative), an amine, and the aqueous-fluid-absorbing particles, at the same time or sep. in no special order, while the **fertilizer granules** are kept fluidized or rolled, thereby to form a precursory film on the **fertilizer granules**; and (b) curing the precursory film into the film. Each **coated granular fertilizer** is superior in regulation of the release of **plant nutrient elements** therefrom.

IT 75-56-9D, Propylene oxide, amine adduct, reaction product with diphenylmethane **diisocyanate**-modified castor oil  
 101-68-8D, Diphenylmethane **diisocyanate**, castor oil modified by, reaction product with **polyol** amine  
 26471-62-5D, Toluylene **diisocyanate**, castor oil modified by, reaction product with **polyol** amine  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (coating for **granular fertilizers**)

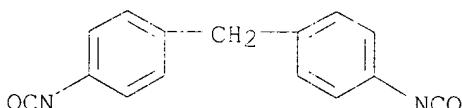
RN 75-56-9 HCAPLUS

CN Oxirane, 2-methyl- (CA INDEX NAME)



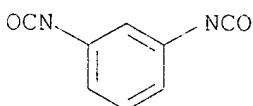
RN 101-68-8 HCAPLUS

CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



RN 26471-62-5 HCAPLUS

CN Benzene, 1,3-diisocyanatomethyl- (CA INDEX NAME)



D1--Me

L134 ANSWER 31 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1998:41819 HCAPLUS

DN 128:115400

TI Base-degradable nonaqueous **polyurethane** useful in applications where delamination of the laminated composite or **coating** removal is desirable or as **encapsulating** agents for **slow**

## release of materials

IN Dodge, Jeffrey A.; Sarpeshkar, Ashok M.; Markusch, Peter H.; Dormish, Jeffrey F.

PA Bayer Corporation, USA

SO U.S., 6 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5708073	A	19980113	US 1996-652884	19960523 <--
	CA 2203867	A1	19971123	CA 1997-2203867	19970428 <--
PRAI	US 1996-652884	A	19960523 <--		

AB Title **polyurethane** is prepared by reacting an organic **polyisocyanate** with a hydroxyl group-containing hydrophilic composition. The hydrophilic composition has an average OH functionality 1.5-4 and contains  $\geq 0.1\%$  ionic and/or acidic groups,  $\geq 25\%$  polyester groups, and preferably  $\geq 20\%$  polyoxyethylene groups having  $\geq 5$  oxyethylene units in length. Thus, a **polyurethane** film which degraded within 9 min after immersion in 3% aqueous NaOH at 70° was prepared from a formulation comprising **polyol** blends, which have an average OH functionality 2.79, ethylene oxide unit 47.6%, ionic/acidic groups 1.6%, and ester groups 42.3% and comprise trimethylolpropane-started polyether ester triol composed of adipic acid and polyethylene oxide (Mw 4550) 84.6, 2,2-bis(hydroxymethyl)propionic acid 1.7, propoxylated sodium salt of 1,4-dihydroxy-2-butanesulfonic acid 6.3, Bu Carbitol-started polyethylene oxide-polypropylene oxide monool (I) (Mw 2200) 3.7, and bisphenol A-started polypropylene oxide **polyol** (Mw 550) 2.8 parts, and 24.3 parts **urethane**-modified **polyisocyanate** prepared by the reaction of a polymeric diphenylmethane **diisocyanate** with I.

IT 201555-86-4P 201555-87-5P 201555-88-6P

201555-89-7P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of base-degradable nonaq. **polyurethane** useful in applications where delamination of laminated composite or coating removal is desirable or as encapsulating agents for slow release of materials)

RN 201555-86-4 HCAPLUS

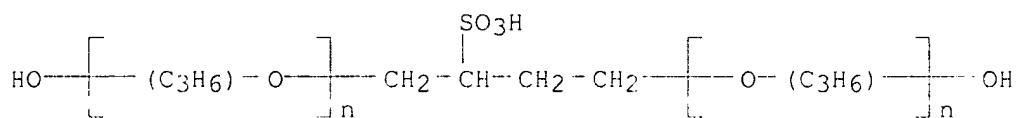
CN Hexanedioic acid, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), 3-hydroxy-2-(hydroxymethyl)-2-methylpropanoic acid,  $\alpha,\alpha'$ -[(1-methylethylidene)di-4,1-phenylene]bis[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)]], methyloxirane polymer with oxirane 2-(2-butoxyethoxy)ethyl ether, polymethylenepolyphenylene isocyanate and  $\alpha,\alpha'$ -(2-sulfo-1,4-butanediyl)bis[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)]] monosodium salt (9CI) (CA INDEX NAME)

CM 1

CRN 59871-54-4

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>4</sub> H<sub>10</sub> O<sub>5</sub> S . Na

CCI IDS, PMS



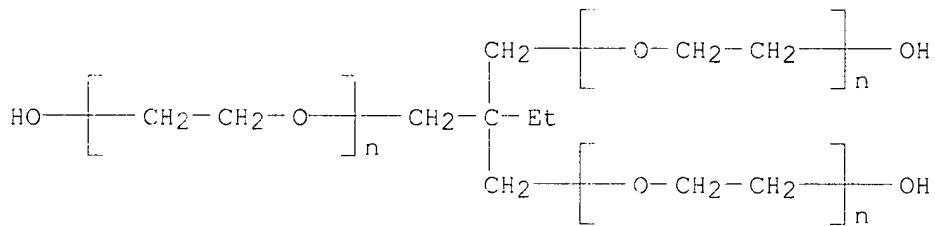
● Na

CM 2

CRN 50586-59-9

CMF  $(\text{C}_2\text{H}_4\text{O})_n (\text{C}_2\text{H}_4\text{O})_n (\text{C}_2\text{H}_4\text{O})_n \text{C}_6\text{H}_{14}\text{O}_3$ 

CCI PMS

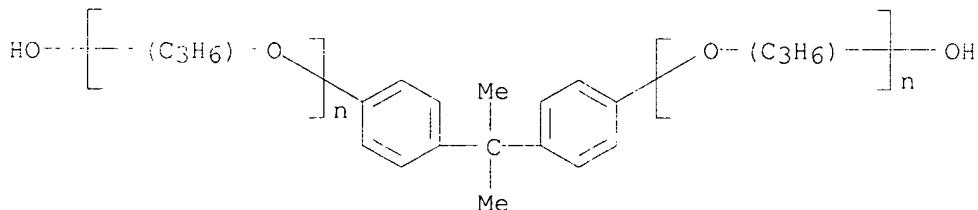


CM 3

CRN 37353-75-6

CMF  $(\text{C}_3\text{H}_6\text{O})_n (\text{C}_3\text{H}_6\text{O})_n \text{C}_{15}\text{H}_{16}\text{O}_2$ 

CCI IDS, PMS



CM 4

CRN 9016-87-9

CMF Unspecified

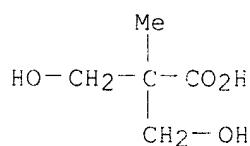
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

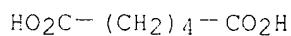
CM 5

CRN 4767-03-7

CMF  $\text{C}_5\text{H}_{10}\text{O}_4$



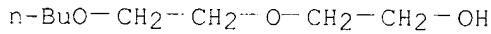
CM 6

CRN 124-04-9  
CMF C6 H10 O4

CM 7

CRN 85637-75-8  
CMF C8 H18 O3 . (C3 H6 O . C2 H4 O) x

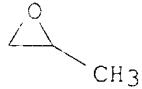
CM 8

CRN 112-34-5  
CMF C8 H18 O3

CM 9

CRN 9003-11-6  
CMF (C3 H6 O . C2 H4 O) x  
CCI PMS

CM 10

CRN 75-56-9  
CMF C3 H6 O

CM 11

CRN 75-21-8  
CMF C2 H4 O



RN 201555-87-5 HCAPLUS

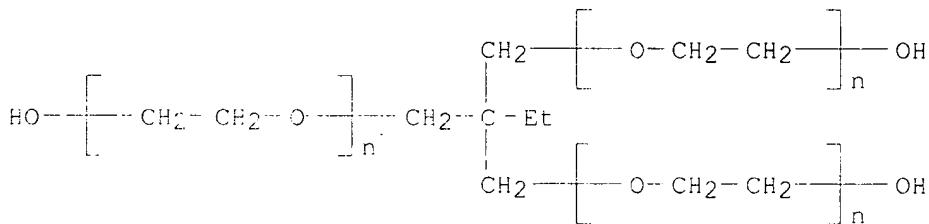
CN Hexanedioic acid, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), 3-hydroxy-2-(hydroxymethyl)-2-methylpropanoic acid,  $\alpha,\alpha'$ -[(1-methylethylidene)di-4,1-phenylene]bis[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)]], methyloxirane polymer with oxirane 2-(2-butoxyethoxy)ethyl ether and polymethylenepolyphenylene isocyanate (9CI) (CA INDEX NAME)

CM 1

CRN 50586-59-9

CMF (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>14</sub> O<sub>3</sub>

CCI PMS

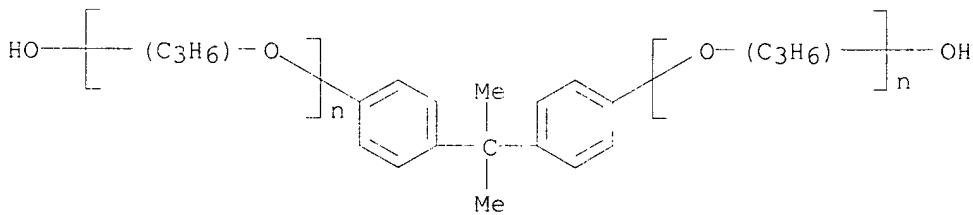


CM 2

CRN 37353-75-6

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>15</sub> H<sub>16</sub> O<sub>2</sub>

CCI IDS, PMS



CM 3

CRN 9016-87-9

CMF Unspecified

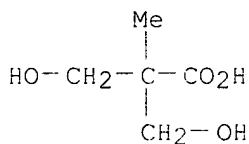
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

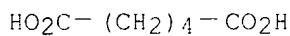
CM 4

CRN 4767-03-7

CMF C5 H10 O4



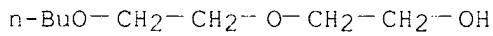
CM 5

CRN 124-04-9  
CMF C6 H10 O4

CM 6

CRN 85637-75-8  
CMF C8 H18 O3 . (C3 H6 O . C2 H4 O) x

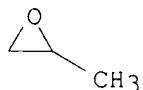
CM 7

CRN 112-34-5  
CMF C8 H18 O3

CM 8

CRN 9003-11-6  
CMF (C3 H6 O . C2 H4 O) x  
CCI PMS

CM 9

CRN 75-56-9  
CMF C3 H6 O

CM 10

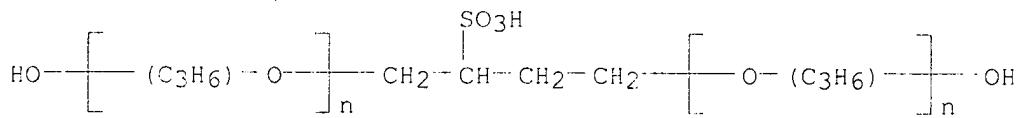
CRN 75-21-8  
CMF C2 H4 O



RN 201555-88-6 HCAPLUS  
 CN Hexanedioic acid, polymer with 1,4-butanediol, 3-hydroxy-2-(hydroxymethyl)-2-methylpropanoic acid,  $\alpha,\alpha'$ -[(1-methylethylidene)di-4,1-phenylene]bis[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)]], methyloxirane polymer with oxirane 2-(2-butoxyethoxy)ethyl ether, polymethylenepolyphenylene isocyanate and  $\alpha,\alpha'$ -(2-sulfo-1,4-butanediyl)bis[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] monosodium salt (9CI) (CA INDEX NAME)

CM 1

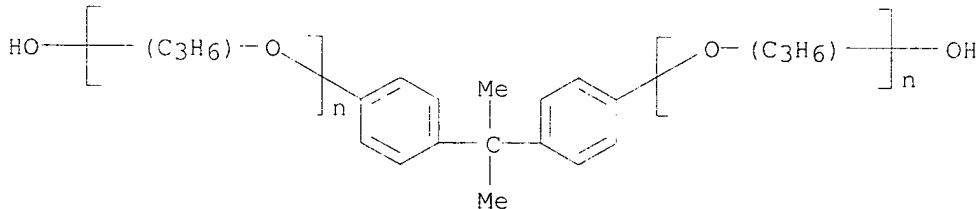
CRN 59871-54-4  
 CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>4</sub> H<sub>10</sub> O<sub>5</sub> S . Na  
 CCI IDS, PMS



• Na

CM 2

CRN 37353-75-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>15</sub> H<sub>16</sub> O<sub>2</sub>  
 CCI IDS, PMS



CM 3

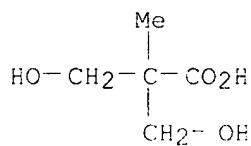
CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

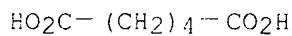
CM 4

CRN 4767-03-7

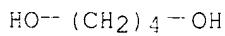
CMF C5 H10 O4



CM 5

CRN 124-04-9  
CMF C6 H10 O4

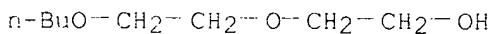
CM 6

CRN 110-63-4  
CMF C4 H10 O2

CM 7

CRN 85637-75-8  
CMF C8 H18 O3 . (C3 H6 O . C2 H4 O)x

CM 8

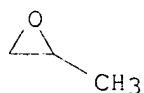
CRN 112-34-5  
CMF C8 H18 O3

CM 9

CRN 9003-11-6  
CMF (C3 H6 O . C2 H4 O)x  
CCI PMS

CM 10

CRN 75-56-9  
CMF C3 H6 O



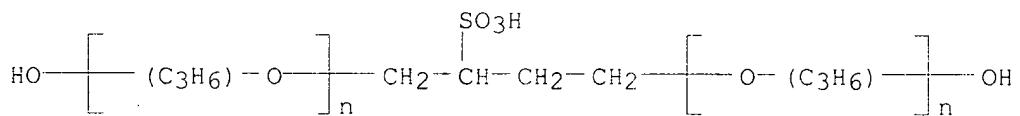
CM 11

CRN 75-21-8  
CMF C<sub>2</sub> H<sub>4</sub> O

RN 201555-89-7 HCAPLUS

CN Hexanedioic acid, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1),  $\alpha,\alpha'$ -[(1-methylethylidene)di-4,1-phenylene]bis[ $\omega$ -hydroxypoly(oxy(methyl-1,2-ethanediyl))], methyloxirane polymer with oxirane 2-(2-butoxyethoxy)ethyl ether, polymethylenepolyphenylene isocyanate and  $\alpha,\alpha'$ -(2-sulfo-1,4-butanediyl)bis[ $\omega$ -hydroxypoly(oxy(methyl-1,2-ethanediyl))] monosodium salt (9CI) (CA INDEX NAME)

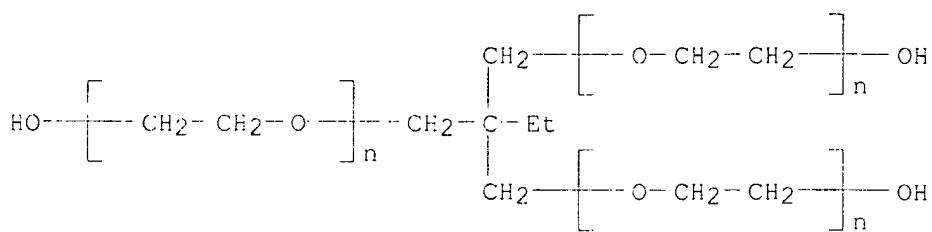
CM 1

CRN 59871-54-4  
CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>4</sub> H<sub>10</sub> O<sub>5</sub> S . Na  
CCI IDS, PMS

● Na

CM 2

CRN 50596-59-9  
CMF (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>14</sub> O<sub>3</sub>  
CCI PMS

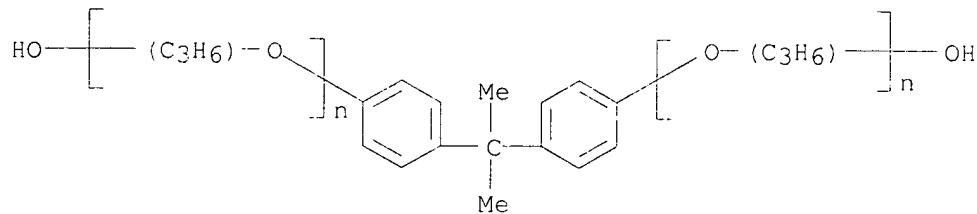


CM 3

CRN 37353-75-6

CMF (C3 H6 O)n (C3 H6 O)n C15 H16 O2

CCI IDS, PMS



CM 4

CRN 9016-87-9

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 5

CRN 124-04-9

CMF C6 H10 O4

HO2C-(CH2)4-CO2H

CM 6

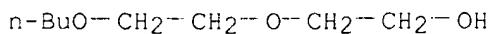
CRN 85637-75-8

CMF C8 H18 O3 . (C3 H6 O . C2 H4 O)x

CM 7

CRN 112-34-5

CMF C8 H18 O3

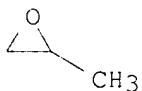


CM 8

CRN 9003-11-6  
 CMF (C<sub>3</sub> H<sub>6</sub> O . C<sub>2</sub> H<sub>4</sub> O) x  
 CCI PMS

CM 9

CRN 75-56-9  
 CMF C<sub>3</sub> H<sub>6</sub> O



CM 10

CRN 75-21-8  
 CMF C<sub>2</sub> H<sub>4</sub> O



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Blum	1992			US 5126393	HCAPLUS
Dieterich	1981			US 4293474	HCAPLUS
D'Haese	1995			US 5380779	HCAPLUS
Gomi	1986			US 4622360	HCAPLUS
Mosbach	1988			US 4764553	HCAPLUS
Taylor	1977			US 4053666	
Taylor	1977			US 4055441	

L134 ANSWER 32 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1997:664186 HCAPLUS

DN 127:330866

TI Thermoplastic resin-coated sustained-release  
fertilizer granules

IN Nakamura, Hiroshi

PA Sumitomo Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
PI JP 09263474	A	19971007	JP 1996-76007	19960329 <--

AU 9712569 A 19970814 AU 1997-12569 19970206 <--  
 AU 704560 B2 19990429  
 PRAI JP 1996-22499 A 19960208 <--  
 JP 1996-76007 A 19960329 <--

AB The title **granules** are obtained by **coating** **fertilizer granules** with thermoplastic resins containing dispersed powders insol. in or immiscible with water. Urea **granules** were **coated** with a mixture of clay, Sumidur 44V10 (polymeric MDI), Sumiphen TM (polyether-**polyol**), and Sumicure D (catalyst) to give a **sustained-release** **fertilizer**.

IT 57029-46-6

RL: AGR (Agricultural use); POF (Polymer in formulation); BIOL (Biological study); USES (Uses)

(**sustained-release fertilizer**

**granules coated** with thermoplastic resins and water-insol. powders)

RN 57029-46-6 HCPLUS

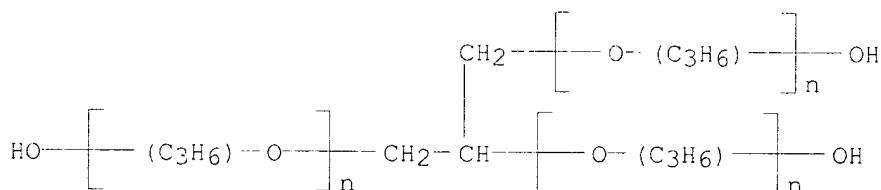
CN Isocyanic acid, polymethylenopolyphenylene ester, polymer with  $\alpha, \alpha', \alpha''-1,2,3$ -propanetriyltris[ $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)]] (CA INDEX NAME)

CM 1

CRN 25791-96-2

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>3</sub> H<sub>8</sub> O<sub>3</sub>

CCI IDS, PMS



CM 2

CRN 9016-87-9

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 33 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1997:542738 HCPLUS

DN 127:205058

TI **Controlled-release fertilizers**  
 coated with thermosetting resins

IN Nakamura, Hiroshi

PA Sumitomo Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 2

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

-----  
 PI JP 09208355 A 19970812 JP 1996-22499 19960208 <--  
 JP 3435959 B2 20030811  
 AU 9712569 A 19970814 AU 1997-12569 19970206 <--  
 AU 704560 B2 19990429  
 PRAI JP 1996-22499 A 19960208 <--  
 JP 1996-76007 A 19960329 <--  
 AB Title **fertilizers** comprise **granular**  
**fertilizers coated** with  $\geq 2$  thermally cured  
 thermosetting resins having different hydrophilicity. Sumidur 44V10  
 (polymeric MDI, NCO equivalent 135 g) 135, Sumiphen TM (**polyol**, OH  
 equivalent 148 g) 148, and Sumicure D [2,4,6-tris(dimethylaminomethyl)phenol]  
 2.8 weight parts were heated at 70° for 30 min to give a cured resin  
 showing water absorption (after soaking in boiling water for 24 h) 2.17%.  
 Urea **granule** was **coated** with 8 weight% of the resin to  
 prepare a **fertilizer** showing 80% active ingredient dissoln. after  
 .apprx.130 days.

IT 53862-89-8 57029-46-6 61111-77-1  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (**controlled-release fertilizers**  
**coated** with thermosetting resins)

RN 53862-89-8 HCPLUS

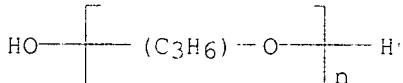
CN Isocyanic acid, polymethylenopolyphenylene ester, polymer with  
 $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] (CA INDEX  
 NAME)

CM 1

CRN 25322-69-4

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> H<sub>2</sub> O

CCI IDS, PMS



CM 2

CRN 9016-87-9

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 57029-46-6 HCPLUS

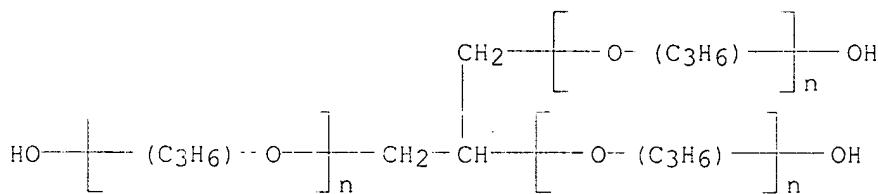
CN Isocyanic acid, polymethylenopolyphenylene ester, polymer with  
 $\alpha, \alpha', \alpha''-1,2,3$ -propanetriyltris[ $\omega$ -  
 hydroxypoly[oxy(methyl-1,2-ethanediyl)]] (CA INDEX NAME)

CM 1

CRN 25791-96-2

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>3</sub> H<sub>8</sub> O<sub>3</sub>

CCI IDS, PMS



CM 2

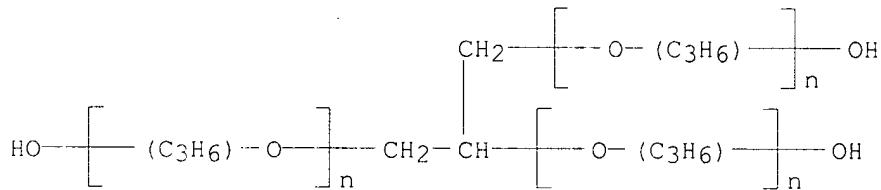
CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 61111-77-1 HCAPLUS  
 CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)] and  
 $\alpha, \alpha', \alpha''$ -1,2,3-propanetriyltris[ $\omega$ -  
 hydroxypoly[oxy(methyl-1,2-ethanediyl)] (CA INDEX NAME)

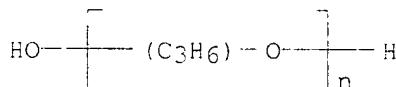
CM 1

CRN 25791-96-2  
 CMF (C3 H6 O)n (C3 H6 O)n (C3 H6 O)n C3 H8 O3  
 CCI IDS, PMS



CM 2

CRN 25322-69-4  
 CMF (C3 H6 O)n H2 O  
 CCI IDS, PMS



CM 3

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN



CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 35 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1996:486067 HCPLUS  
 DN 125:141627  
 TI **Controlled release fertilizers**  
 IN Hudson, Alice P.; Woodward, Fred E.; Robinson, Louis  
 PA USA  
 SO U.S., 7 pp., Cont.-in-part of U.S. Ser. No. 719,975, abandoned.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI US 5538531	A	19960723	US 1994-177910	19940106 <--
PRAI US 1991-719975	B2	19910624 <--		

AB **Controlled release, particulate fertilizer** products, having a water soluble **fertilizer** central mass encased in a plurality of water insol., abrasion resistant **coatings** plus unique **coating** compns., are given. At least one essential inner **coating** is a **urethane** reaction product of (1) a **polyisocyanate** selected from diphenylmethane **diisocyanate**, toluene **diisocyanate**, derivs. thereof, polymers thereof and mixts. thereof, which contain about 1.5 to 3 **isocyanate** groups per mol. and between about 10 and 50% NCO, and (2) a **polyol** having about 2 to 6 hydroxyl moieties and at least one alkyl moiety containing about 10 to 22 carbon atoms, e.g. hydrogenated castor oil. An essential outer **coating** is formed of an organic wax having a drop m.p. 50-120°.

IT 9016-87-9D, PAPI 94, reaction product with castor oil  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (coating for controlled release fertilizers)

RN 9016-87-9 HCPLUS  
 CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 36 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN  
 AN 1996:371957 HCPLUS  
 DN 125:32774  
 TI Process for producing improved sulfur-**coated** urea **slow**-**release** fertilizers  
 IN Detrick, John H.  
 PA USA  
 SO PCT Int. Appl., 11 pp.  
 CODEN: PTXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 9609267	A1	19960328	WO 1995-US12060	19950922 <--
W: AU, CA, CN, HU, JP, KP, KR, MX, NO, NZ				

RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE  
 US 5599374 A 19970204 US 1994-311672 19940923 <--  
 CA 2176605 A1 19960328 CA 1995-2176605 19950922 <--  
 CA 2176605 C 20051115  
 AU 9536811 A 19960409 AU 1995-36811 19950922 <--  
 AU 688602 B2 19980312  
 EP 730565 A1 19960911 EP 1995-934488 19950922 <--  
 EP 730565 B1 20010328

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, NL, PT, SE  
 CN 1135745 A 19961113 CN 1995-190939 19950922 <--  
 CN 1072196 B 20011003  
 JP 10513144 T 19981215 JP 1996-511086 19950922 <--  
 JP 3006774 B2 20000207  
 AT 200071 T 20010415 AT 1995-934488 19950922 <--  
 PT 730565 T 20010731 PT 1995-934488 19950922 <--  
 ES 2157347 T3 20010816 ES 1995-934488 19950922 <--  
 NO 9602090 A 19960621 NO 1996-2090 19960522 <--  
 GR 3036059 T3 20010928 GR 2001-400901 20010615 <--

PRAI: US 1994-311672 A 19940923 <--  
 WO 1995-US12060 W 19950922 <--

AB The invention describes a **sulfur-coated urea slow-release granular fertilizer**, having a uniform, durable polymeric **coating** over the **sulfur-coating**.

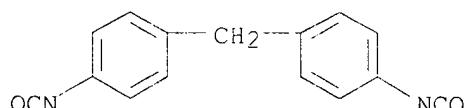
The polymer **coating** is formed by the direct in situ copolymer. of diethylene glycol-triethanolamine **polyol** and a **diisocyanate** on the surface of the **sulfur-coated urea granule**. The polymeric **coating** provides improved impact resistance of the composite **coated granule**.

IT 101-68-8D, 4,4'-Diphenylmethane **diisocyanate**, polymer with polyester **polyol** and DEG 177912-04-8

RL: MOA (Modifier or additive use); USES (Uses)  
 (overcoat; sulfur-coated urea slow-release fertilizers)

RN 101-68-8 HCPLUS

CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



RN 177912-04-8 HCPLUS

CN Ethanol, 2,2',2''-nitrilotris-, polymer with 1,1'-methylenebis[4-isocyanatobenzene] and 2,2'-oxybis[ethanol] (CA INDEX NAME)

CM 1

CRN 111-46-6

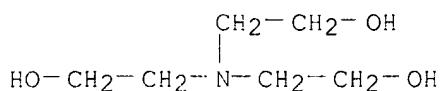
CMF C4 H10 O3

HO-CH<sub>2</sub>-CH<sub>2</sub>-O-CH<sub>2</sub>-CH<sub>2</sub>-OH

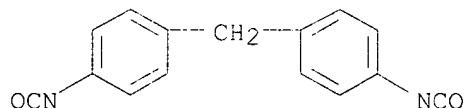
CM 2

CRN 102-71-6

CMF C6 H15 N 03



CM 3

CRN 101-68-8  
CMF C15 H10 N2 O2L134 ANSWER 37 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN  
AN 1995:312555 HCPLUS

DN 122:80293

TI Manufacture of **slow-release fertilizers** with  
polymeric **coating** materials

PA Korea Institute of Science and Technology, S. Korea

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06279161	A	19941004	JP 1993-149938	19930622 <--
	JP 08025828	B	19960313		
	KR 9506288	B1	19950613	KR 1992-12221	19920709 <--
PRAI	KR 1992-12221	A	19920709 <--		

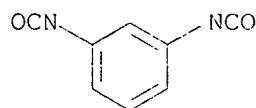
AB Rosin (wood rosin, gum rosin, or oil rosin) 30-100 % by weight and its derivative

70-0 % by weight are mixed, and to this mixture is added a **coating** polymer such as Et cellulose (0-20 % by weight against the mixture), and then the **granules** are further **coated** with another polymer (protective material) like acrylic polymer to give a **slow-release fertilizer**. The first **coating** material is Et cellulose, poly(vinyl acetate), or vinyl acetate-rosin copolymer, whereas the protective **coating** material is Et cellulose, benzyl cellulose, poly(vinyl acetate), nitro cellulose, vinyl acetate-rosin copolymers, acrylic polymer, and styrene polymers.

IT 26471-62-5D, Toluene **diisocyanate**, reaction products with rosinsRL: RCT (Reactant); RACT (Reactant or reagent)  
(in manufacture of **slow-release fertilizers**)

RN 26471-62-5 HCPLUS

CN Benzene, 1,3-diisocyanatomethyl- (CA INDEX NAME)



D1-Me

L134 ANSWER 38 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

AN 1995:305821 HCPLUS

DN 122:132144

TI Machine system and process for producing attrition-resistant **slow-release fertilizers**.

IN Detrick, John H.; Carney, Frederick Jr.

PA Pursell Industries, USA

SO U.S., 9 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5374292	A	19941220	US 1993-14519	19930208 <--
	US 5547486	A	19960820	US 1994-356572	19941215 <--
	US 6537611	B1	20030325	US 1998-78477	19980514 <--
PRAI	US 1993-14519	A1	19930208	<--	
	US 1994-356572	A1	19941215	<--	
	US 1996-652340	A3	19960522	<--	

AB In the process, a prewet solution is used to initially **coat** urea **granules**, followed by the sep. application of the individual components used in the **coating**. Prewetting is carried out prior to the reaction with an organic **diisocyanate**, such as diphenylmethane **diisocyanate**. The prewet solution comprises a **polyol**-catalyst, such a triethanolamine, and a water-soluble low mol. weight **polyol**, such as glycerol. Further concurrent or sequential pretreatment is carried out with a polyester **polyol**, such as polyethylene terephthalate polyester **polyol**. The machine system provides an improved means for uniformly applying a single layer or multiple layers of polymer **coatings** to the **granules**.

IT 161011-63-8

RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(coating for **slow-release fertilizers**)

RN 161011-63-8 HCPLUS

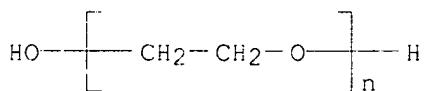
CN 1,4-Benzenedicarboxylic acid, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) and 1,1'-methylenebis[4-isocyanatobenzene] (9CI) (CA INDEX NAME)

CM 1

CRN 25322-68-3

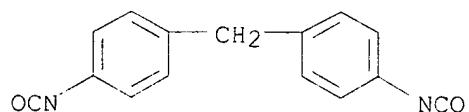
CMF (C<sub>2</sub>H<sub>4</sub>O)<sub>n</sub>H<sub>2</sub>O

CCI PMS



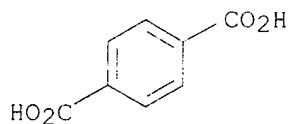
CM 2

CRN 101-68-8  
 CMF C15 H10 N2 O2



CM 3

CRN 100-21-0  
 CMF C8 H6 O4



L134 ANSWER 39 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN.

AN 1994:115117 HCPLUS

DN 120:115117

TI Plasticized gypsum composition

IN Roosen, Peter Paul; Koldyk, Gerard Henry; Pap, Frank

PA Accuflex Products Inc., Can.

SO PCT Int. Appl., 33 pp.

CODEN: PIXXD2

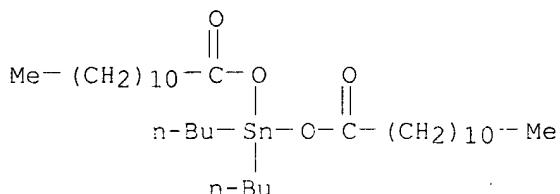
DT Patent

LA English

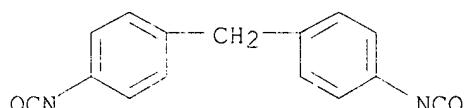
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9322253	A1	19931111	WO 1993-CA177	19930426 <--
	W: AT, AU, BB, BG, BR, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	CA 2084494	A1	19931029	CA 1992-2084494	19921203 <--
	CA 2084494	C	19970624		
	AU 9342572	A	19931129	AU 1993-42572	19930426 <--
	AU 672792	B2	19961017		
	DE 4391813	T0	19950413	DE 1993-4391813	19930426 <--
	JP 08500319	T	19960116	JP 1993-518795	19930426 <--
	US 5344490	A	19940906	US 1993-110920	19930824 <--
	GB 2281560	A	19950308	GB 1994-21672	19941027 <--

GB 2281560 B 19960529  
PRAI US 1992-875181 A 19920428 <--  
WO 1993-CA177 A 19930426 <--  
AB The gypsum composition is plasticized by a polymer, e.g., **polyurethane**, and comprises 5-20 weight% polymerizable **isocyanate** and a mixture of 40-90 weight% gypsum and balance glyceride. The composition is prepared by blending the components in the prescribed proportions, and is used as a soil conditioner and building material.  
IT 77-58-7, Dibutyltindilaurate  
RL: USES (Uses)  
(accelerator, in composition containing plasticized gypsum and, for building materials and soil conditioner)  
RN 77-58-7 HCAPLUS  
CN Dodecanoic acid, 1,1'-(dibutylstannylene) ester (CA INDEX NAME)



IT 101-68-8, 4,4'-Diphenylmethane diisocyanate  
9016-87-9  
RL: MOA (Modifier or additive use); USES (Uses)  
(plasticizer, in composition containing glyceride and plasticized gypsum,  
for building materials and soil conditioner)  
RN 101-68-8 HCPLUS  
CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



RN 9016-87-9 HCAPLUS  
CN Isocyanic acid, polymethylenepolyphenylene ester (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L134 ANSWER 40 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ANSWER TO Q1 TO NSR  
AN 1993:146822 HCAPLUS

AN 1995.14682  
DN 118.146822

DN 110.140022  
TI Polyurethane-coated granular  
fertilizers

IN **fertilizers** Buerger; Horst; Ischowitz; Michael; Kloth; Bernhard; Kobl; Wilhelm;

IN Buerger, Horst; Jaschikowitz, Wagoner, Holger; Wahr, Peter

Wegener, Holger; Wehr, Peter  
BA Aglukan Spezialdrucker GmbH, Germany

PA Aglukon Spezialdienst  
SO Son. Offizier 11. nn

so Ger. Offen.,  
GÖDEN: SWYRD

CODEN: DT Part 2

DT Patent  
LA

LA Germ  
EAN CNT 1

FAN.CNT 1

PATENT NO.

KIND DATE

APPLICATION NO.

DATE

PI	DE 4127459	A1	19930225	DE 1991-4127459	19910820 <--
	DE 4127459	C2	19930729		
	WO 9304017	A1	19930304	WO 1992-DE697	19920818 <--
	W: AU, CA, CS, FI, HU, JP, NO, PL, RU, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE				
	AU 9224399	A	19930316	AU 1992-24399	19920818 <--
	AU 652663	B2	19940901		
	EP 599927	A1	19940608	EP 1992-917606	19920818 <--
	EP 599927	B1	19970611		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, SE				
	JP 07500560	T	19950119	JP 1992-504031	19920818 <--
	HU 70289	A2	19950928	HU 1994-479	19920818 <--
	HU 218166	B	20000628		
	AT 154341	T	19970615	AT 1992-917606	19920818 <--
	RU 2091357	C1	19970927	RU 1994-15604	19920818 <--
	ES 2104939	T3	19971016	ES 1992-917606	19920818 <--
	CZ 282958	B6	19971112	CZ 1994-367	19920818 <--
	CA 2115998	C	20030729	CA 1992-2115998	19920818 <--
	IL 102868	A	19951031	IL 1992-102868	19920819 <--
	ZA 9206284	A	19930518	ZA 1992-6284	19920820 <--
	NO 9400386	A	19940207	NO 1994-386	19940207 <--
PRAI	DE 1991-4127459	A	19910820	<--	
	WO 1992-DE697	A	19920818	<--	

AB NPK fertilizer granules are coated with a mixture of polyisocyanate and polyol. Curing is carried out by exposure to an airless fog of amine, e.g. Me2CHNMe2, as catalyst. The coating is 10-30, preferably 15-20  $\mu$ m thick. The coated granules release mainly N initially, and then K.

L134 ANSWER 41 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1993:80098 HCAPLUS

DN 118:80098

TI Coated fertilizer granules.

IN Uchida, Yasuzo; Yamashita, Minoru; Iwagami, Akio; Hatano, Kota

PA Yukishitsu Hiryō Seibutsu Kassei Ryo Gijutsu Kenkyu Kumiai, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04305085	A	19921028	JP 1991-66508	19910329 <--	
PRAI	JP 1991-66508		19910329 <--		

AB Fertilizer granules are coated with reaction products of polyisocyanates and polyhydroxylated compds. (wool grease, lanolin, lanolin fatty acids, and/or lanolin alcs). The coating materials are disintegrated in the soil and are nonpolluting.

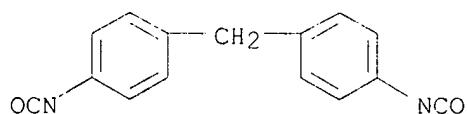
IT 101-68-8D, reaction products with polyhydroxylated compds. 584-84-9D, 2,4-Tolylenediisocyanate, reaction products with polyhydroxylated compds. 822-06-0D, Hexamethylene diisocyanate, reaction products with polyhydroxylated compds. 4098-71-9D, Isophorone diisocyanate, reaction products with polyhydroxylated compds.

RL: USES (Uses)

(fertilizer granule coatings)

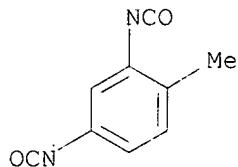
RN 101-68-8 HCAPLUS

CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



RN 584-84-9 HCPLUS

CN Benzene, 2,4-diisocyanato-1-methyl- (CA INDEX NAME)



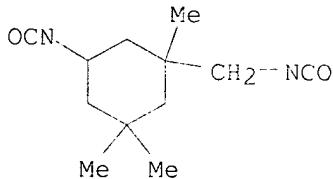
RN 822-06-0 HCPLUS

CN Hexane, 1,6-diisocyanato- (CA INDEX NAME)

OCN--(CH<sub>2</sub>)<sub>6</sub>--NCO

RN 4098-71-9 HCPLUS

CN Cyclohexane, 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethyl- (CA INDEX NAME)



L134 ANSWER 42 OF 46 HCPLUS COPYRIGHT 2008 ACS on STN

AN 1991:80550 HCPLUS

DN 114:80550

TI One-step manufacture of controlled-release plant nutrients

IN Moore, William P.

PA Melamine Chemicals, Inc., USA

SO U.S., 6 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4969947	A	19901113	US 1988-180831	19880412 <--
	CA 1333338	C	19941206	CA 1989-596538	19890412 <--
PRAI	US 1988-180831	A	19880412 <--		

AB A 1-step method of preparing **coated particulate** plant nutrients is described wherein a polyfunctional coupling agent is applied to a mobile mass of plant nutrient **particles** containing functional groups which are chemical reactive with the functional groups (e.g. NH<sub>2</sub>, OH, etc.) of the coupling agent, while simultaneously applying a 2nd reactive material containing functional groups also reactive with the functional groups of the coupling agent, and maintaining the mobile mass at 30-300° until strong, water-insol. **particles** are formed. The product of the 1-step method is a **controlled-release** plant nutrient having excellent attrition resistance. Diphenylmethane **diisocyanate** polymer was sprayed onto N **fertilizer** (mobile mass) and simultaneously was blended with anhydrous **polyol** containing 5-55% OH and 5-15% triethanolamine, and the temperature was kept at 85-115° for 2-10 min to give the **sustained-release fertilizer**.

IT 101-68-8D, polymers 822-06-0D, polymers

25656-78-4D, polymers

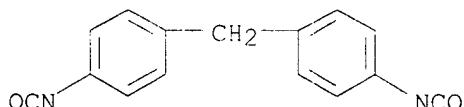
RL: BIOL (Biological study)

(**sustained-release fertilizer**

**coated by**)

RN 101-68-8 HCAPLUS

CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



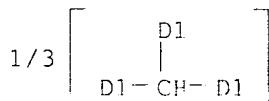
RN 822-06-0 HCAPLUS

CN Hexane, 1,6-diisocyanato- (CA INDEX NAME)

OCN-(CH<sub>2</sub>)<sub>6</sub>-NCO

RN 25656-78-4 HCAPLUS

CN Benzene, 1,1',1'',1'''-methylidynetris[isocyanato- (CA INDEX NAME)



D1-NCO

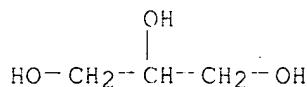
IT 56-81-5D, 1,2,3-Propanetriol, polymers with coupling agent

25265-75-2D, Butanediol, polymers with coupling agent

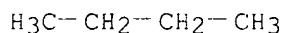
RL: BIOL (Biological study)

(sustained-release fertilizer  
coated with)

RN 56-81-5 HCAPLUS  
CN 1,2,3-Propanetriol (CA INDEX NAME)



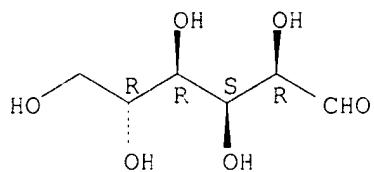
RN 25265-75-2 HCAPLUS  
CN Butanediol (CA INDEX NAME)



2 ( D1-OH )

L134 ANSWER 43 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1988:629467 HCAPLUS  
 DN 109:229467  
 TI Factors affecting nitrogen release of urea from reactive layer  
coated urea  
 AU Christianson, C. B.  
 CS Inst. Fert. Dev. Cent., Muscle Shoals, AL, 35662, USA  
 SO Fertilizer Research (1988), 16(3), 273-84  
 CODEN: FRESDF; ISSN: 0167-1731  
 DT Journal  
 LA English  
 AB An exptl. fertilizer called reactive layer **coated** urea  
(RLCU) has been developed by **coating** urea with a mixture of  
**diisocyanate** and **polyol** in the presence of a catalyst.  
The hard, durable layer that is formed on the **granule** conveys  
**slow-release** character to the product. A series of soil  
incubation tests were conducted under simulated upland conditions for  
periods up to 56 days to study the effect of factors such as temperature, pH,  
soil moisture, and organic C addns. on N **release**. The N  
**release** rate from RLCU was shown to be increased with increasing  
temperature and decreasing **coating** thickness. It was unaffected by  
the addition to lime to raise the pH or organic C sources to increase microbial  
activity. Although a slight effect of soil moisture was noted, it was not  
pronounced. Urea **release** tended to be in 2 stages: a constant  
diffusive stage in which, it is postulated, urea was still dissolving  
within the **granule** and diffusing to the soil at a constant rate  
and a slower logarithmic stage where the rate of **release**  
decreased with time.  
 IT 50-99-7, Glucose, biological studies  
 RL: BIOL (Biological study)  
 (soil amended with, nitrogen release from reactive layer **coated**  
urea in)  
 RN 50-99-7 HCAPLUS  
 CN D-Glucose (CA INDEX NAME)

Absolute stereochemistry.



L134 ANSWER 44 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 AN 1988:149567 HCAPLUS

DN 108:149567

TI Attrition-resistant controlled-release  
 granular fertilizers

IN Moore, William P.

PA USA

SO U.S., 8 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4711659	A	19871208	US 1986-897160	19860818 <--
	US 4804403	A	19890214	US 1987-82236	19870806 <--
	CA 1300394	C	19920512	CA 1987-544504	19870813 <--
	WO 8801132	A1	19880225	WO 1987-US2015	19870817 <--
	W: AU, FI, JP, KR, NO, SU				
	RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
	AU 8778502	A	19880308	AU 1987-78502	19870817 <--
	AU 594605	B2	19900308		
	EP 282513	A1	19880921	EP 1987-905544	19870817 <--
	EP 282513	B1	19911121		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	JP 01500661	T	19890309	JP 1987-505079	19870817 <--
	JP 2532264	B2	19960911		
	EP 399567	A2	19901128	EP 1990-111924	19870817 <--
	EP 399567	A3	19920513		
	EP 399567	B1	19951115		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	AT 69540	T	19911215	AT 1987-905544	19870817 <--
	AT 130287	T	19951215	AT 1990-111924	19870817 <--
	IN 168117	A1	19910209	IN 1987-CA650	19870818 <--
	IN 170148	A1	19920215	IN 1990-CA366	19900503 <--
	IN 170677	A1	19920502	IN 1990-CA367	19900503 <--
	JP 09188588	A	19970722	JP 1995-346888	19951213 <--
	JP 3237690	B2	20011210		
PRAI	US 1986-897160	A2	19860818	<--	
	US 1987-82236	A	19870806	<--	
	EP 1987-905544	A	19870817	<--	
	WO 1987-US2015	A	19870817	<--	
	IN 1987-CA650	A	19870818	<--	

AB The title **fertilizer** comprises a water-soluble central mass, a base coating, a water-insol. sealing layer, and, eventually, 1-5 water-insol. coatings. Urea granules were coated with polymeric diphenylmethane diisocyanate in such a way as to leave an excess of free NCO, which have not reacted with NH<sub>2</sub> group of the urea. The excess NCO was reacted with polyethyleneterephthalate polyester polyol, to form a water-insol. sealing layer. The polyol contained 10%

IT triethanolamine catalyst.  
 IT 113673-21-5  
 RL: BIOL (Biological study)  
 (coating, for controlled-release  
 fertilizer granules)  
 RN 113673-21-5 HCPLUS  
 CN 1,2-Benzenedicarboxylic acid, polymer with 1,2-ethanediol and  
 polymethylenepolyphenylene isocyanate (9CI) (CA INDEX NAME)

CM 1

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

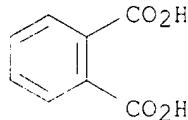
CM 2

CRN 107-21-1  
 CMF C2 H6 O2

HO-CH<sub>2</sub>-CH<sub>2</sub>-OH

CM 3

CRN 88-99-3  
 CMF C8 H6 O4



IT 56529-14-7, PAPI-urea copolymer  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (fertilizer, sustained-release)  
 RN 56529-14-7 HCPLUS  
 CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with urea (9CI)  
 (CA INDEX NAME)

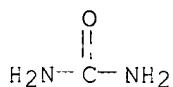
CM 1

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 57-13-6  
 CMF C H4 N2 O



L134 ANSWER 45 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1987:103950 HCAPLUS

DN 106:103950

TI Water-permeable **coatings** for granular water-soluble materials

IN Koegler, Hubert; Winter, Reinhard; Kuhlmann, Peter  
PA Ashland-Suedchemie Kernfest G.m.b.H., Fed. Rep. Ger.

SO Ger., 6 pp.  
CODEN: GWXXAW

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3544451 JP 62144784 JP 07016648 EP 230601 EP 230601 EP 230601	C1 A B A2 A3 B1	19870115 19870627 19950301 19870805 19881130 19921111	DE 1985-3544451 JP 1986-296836 EP 1986-117434	19851216 <-- 19861215 <-- 19861215 <-- 19861215 <-- 19861215 <--

R: AT, BE, CH, DE, ES, FR, GB, IT, LI, LU, NL, SE  
AT 82240 T 19921115 AT 1986-117434 19861215 <--  
US 4772490 A 19880920 US 1986-942155 19861216 <--

PRAI DE 1985-3544451 A 19851216 <--  
EP 1986-117434 A 19861215 <--

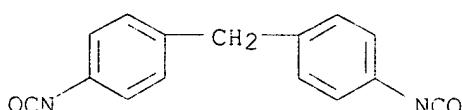
AB The title **coatings**, curable at room temperature without added heat, contain **polyisocyanates**, **polyols** prepared from phenols and aldehydes, alc. plasticizers, amine catalysts, and optionally alc. diluents. A 500-g portion of 15:15:15 N-P-K **fertilizer** (average particle size 3 mm) was **coated** with a mixture of 37.5 parts 60:36:18 1:1.6 PhOH-HCHO resin-castor oil-diacetone alc. mixture and 37.5 parts tech. MDI (30-32% NCO) in 3 portions and exposed to Et<sub>3</sub>N-saturated N at 20° for 24 h. When 12.5 g **coated fertilizer** was left in 250 g H<sub>2</sub>O at 22°, 21.2, 30.0, 31.5, 37.5, and 40.0% dissolved in 1, 2, 3, 4, and 5 wk, resp.; vs. 39.7, 51.2, 53.0, 59.0, and 62.0, resp., for a conventionally-**coated fertilizer**.

IT 101-68-8, MDI

RL: TEM (Technical or engineered material use); USES (Uses)  
(**coatings**, containing phenolic resins, water-permeable, for granular substances)

RN 101-68-8 HCAPLUS

CN Benzene, 1,1'-methylenebis[4-isocyanato- (CA INDEX NAME)



L134 ANSWER 46 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

AN 1974:412479 HCAPLUS

DN 81:12479

OREF 81:2025a,2028a

TI **Granular fertilizer** having dampproof coating

IN Nishida, Shigeru; Ikeda, Minoru

PA Dai Nippon Toryo Co., Ltd.

SO Jpn. Tokkyo Koho, 7 pp.

CODEN: JAXXAD

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI JP 48041991	B	19731210	JP 1964-3789	19640128 <--
PRAI JP 1964-3789		19640128	<--	

AB **Granular fertilizers** having multiple-layer coatings were prepared by coating the **granular fertilizers** with (1) liquid thermosetting or thermoplastic resins, (2) powdered thermosetting or thermoplastic resins with or without **fertilizer** materials, and (3) powdered organic or inorg. dyes. The **fertilizers** had a low hygroscopicity, high strength, and long-lasting effects. Thus, mixed **fertilizer** [K<sub>2</sub>SO<sub>4</sub>-(NH<sub>4</sub>)<sub>2</sub>HPO<sub>4</sub>] **granules** were coated with a **poly(urethane)** resin solution, followed by heat treatment; **polyol** X-450 was added to the mixture; the **coated granules** were passed through gas flame. The **coating** process was repeated.

=&gt; d his

(FILE 'HOME' ENTERED AT 07:00:01 ON 13 FEB 2008)  
SET COST OFF

FILE 'WPIX' ENTERED AT 07:00:13 ON 13 FEB 2008

L1 23917 S C05G/IPC, IC, ICM, ICS OR (C14-T OR B14-T OR C12-N08 OR B12-N08  
 L2 118 S L1 AND (A05-G01E1 OR G02-A05)/MC  
 L3 245 S ((P111 OR P112 OR P113)(S)(R120 OR R307 OR R522))/M0,M1,M2,M3  
 L4 336 S L2,L3  
 L5 43 S L4 AND (?ISOCYAN? OR ISO CYAN? OR POLYISO CYAN?)  
 L6 336 S L4-L5  
 L7 107 S L6 AND (R051 OR R052)/M0,M1,M2,M3,M4,M5,M6  
 L8 95 S L6 AND (C12-M10 OR B12-M10 OR C12-M10A OR B12-M10A OR C12-M10  
 L9 119 S L7,L8  
 L10 21994 S L1 AND (PD<=20031002 OR PRD<=20031002 OR AD<=20031002)  
 L11 15495 S (P111 OR P112 OR P113)/M0,M1,M2,M3,M4,M5,M6 AND (PD<=20031002  
 L12 268 S L10,L11 AND L4  
 L13 2087 S L10,L11 AND ?COAT?  
 L14 2131 S L12,L13  
 L15 96 S L14 AND L9  
 L16 23 S L9 NOT L15  
     SEL AN 21 23 L16  
 L17 2 S L16 AND E1-E2  
 L18 78 S L15 NOT (?ISOCYAN? OR ISO CYAN? OR POLYISO CYAN?)  
 L19 92 S L15 NOT (C10-A14 OR E10-A14)/MC  
 L20 14 S L19 NOT L18  
 L21 78 S L18,L19 NOT L20  
 L22 41 S L10,L11 AND (C10-A14 OR B10-A14)/MC  
 L23 212 S L10,L11 AND (?ISOCYAN? OR ISO CYAN? OR POLYISO CYAN?)  
 L24 37 S L22 NOT L15-L21  
     SEL AN 3 6 L24  
 L25 2 S L24 AND E3-E4

L26 178 S L23 NOT L15-L21, L24  
       SEL AN 3 12 20 22 52 65 79 81 83 99 104 141 150 152 154 155 159  
 L27 18 S L26 AND E5-E22  
 L28 1 S US20050076687/PN OR US2003-682347#/AP, PRN  
       E WHITTINGTON/AU  
 L29 8 S E4, E5  
       E WHITTINGTON/PA  
 L30 3 S E4, E5  
 L31 8 S L28-L30  
 L32 1 S L31 AND L1, L10, L11  
 L33 22 S L17, L25, L27, L28, L32  
 L34 7 S L31 NOT L33  
 L35 22 S L33 AND L1-L34  
 L36 22 S L35 AND (?CYAN? OR ?POLYOL OR ?POLY OL OR (SLOW OR CONTROL? O  
 L37 22 S L36 AND (?ISOCYAN? OR ISO CYAN? OR POLYISO CYAN? OR POLY() (IS  
 L38 19 S L37 AND (POLYOL OR POLY OL OR POLYHYDROX? OR POLY HYDROX?)  
 L39 3 S L37 NOT L38  
 L40 22 S L37-L39  
 L41 7 S L40 AND (PLANT. OR VEGETABL? OR COTTONSEED OR COTTON SEED OR L  
 L42 6 S L40 AND (?WAXY? OR ?WAXE? OR WAX? OR ?POWD? OR DIATOM? (L) EART  
 L43 1 S L40 AND (BA OR BARIUM) () (SULFATE OR SULPHATE)  
 L44 1 S L40 AND OIL(S) DYE?  
 L45 2 S L40 AND (CU OR COPPER OR CUPR? OR ZN OR ?ZINC? OR MICRONUTRI?  
 L46 1 S L40 AND (DIBUTYL (S) TIN (S) DILAURATE)  
 L47 22 S L40-L46

FILE 'WPIX' ENTERED AT 07:51:42 ON 13 FEB 2008

FILE 'HCAPLUS' ENTERED AT 07:51:59 ON 13 FEB 2008  
 L48 1 S US20050076687/PN OR US2003-682347#/AP, PRN  
       E WHITTINGTON/AU  
 L49 5 S E4, E11  
 L50 1 S L48 AND L49  
       SEL RN

FILE 'REGISTRY' ENTERED AT 07:53:04 ON 13 FEB 2008

L51 2 S E1-E2  
 L52 1 S 39394-41-7  
 L53 1 S L51 AND PMS/CI  
 L54 1 S L51 NOT L53  
       E DIBUTYL TIN DILAURATE/CN  
       E C32H64O4SN/MF  
 L55 11 S E3  
       SEL RN 1 3 4 6 8 9  
 L56 5 S L55 NOT E1-E6  
 L57 71 S (CU OR ZN)/MF NOT MASS  
 L58 751 S (CU AND ZN)/ELS AND 2/ELC.SUB

FILE 'HCAPLUS' ENTERED AT 07:58:54 ON 13 FEB 2008

L59 204 S L52 OR L53  
 L60 394090 S FERTILIZ?/SC, SX, CW, CT OR C05G/IPC, IC, ICM, ICS  
       E FERTILIZER/CT  
 L61 86367 S E3, E10  
 L62 86368 S E10-E83  
       E E10+ALL  
 L63 86367 S E10, E11  
 L64 23541 S E15+OLD, NT OR E19+OLD, NT  
 L65 19300 S E22+OLD, NT  
       E E20+ALL  
 L66 29988 S E2+OLD

E E8+ALL  
 E E23+ALL  
 L67 4040 S E1  
 L68 444717 S L60-L67 OR ?FERTILIZ? OR ?FERTILS?  
 E POLYURETHANE/CT  
 E E145+ALL  
 L69 542 S L68 AND E17+OLD  
 L70 3 S L68 AND E16(L) POLY?  
 L71 582 S L68 AND (?POLYURETHAN? OR POLY URETHAN?)  
 E POLYISOCYAN/CT  
 L72 372 S L68 AND (?ISOCYAN? OR ISO CYAN? OR POLYISO CYAN? OR POLY() (IS  
 L73 1 S L59 AND L68  
 L74 728 S L68 AND ?URETHAN?  
 L75 922 S L69-L74  
 L76 248 S L75 AND PY<=2003 NOT P/DT  
 L77 490 S L75 AND (PD<=20031002 OR PRD<=20031002 OR AD<=20031002) AND P  
 L78 738 S L76, L77  
 L79 77 S L78 AND (POLYOL OR POLY OL OR POLYHYDROX? OR POLY HYDROX?)  
 L80 17 S L78 AND (POLYHYDRIC OR POLY HYDRIC)  
 E POLYOL/CT  
 E E4+ALL  
 L81 12 S L78 AND E2  
 E E1  
 E E4+ALL  
 L82 3 S L78 AND E2  
 E E1  
 E E4+ALL  
 L83 0 S L78 AND E2  
 E E1  
 E E6+ALL  
 L84 1 S L78 AND E2  
 E E1  
 E E7+ALL  
 L85 43 S L78 AND E2, E3, E4  
 L86 113 S L79-L85  
 L87 5 S L78 AND (L54 OR (BA OR BARIUM) () (SULFATE OR SULPHATE))  
 L88 5 S L78 AND L56  
 L89 22 S L78 AND L57  
 L90 0 S L78 AND L58  
 L91 5 S L87-L89 AND L79-L85  
 SEL AN 1 2 4  
 L92 2 S L91 NOT E1-E6  
 L93 26 S L87-L89 NOT L91  
 SEL AN 13  
 L94 1 S L93 AND E7-E8  
 L95 108 S L86 NOT L87-L94  
 L96 55 S L95 AND ?COAT?  
 L97 32 S L95 AND (SLOW OR CONTROL? OR DELAY? OR SUSTAIN?) (L) RELEAS?  
 L98 58 S L96, L97  
 L99 53 S L98 NOT PHARMACEUT?/SC, SX  
 L100 51 S L99 NOT A61K/IPC, IC, ICM, ICS  
 SEL AN 4 12 18 20 25 26 50  
 L101 44 S L100 NOT E9-E22  
 L102 45 S L94, L101  
 L103 7 S L98 NOT L100  
 L104 50 S L95 NOT L96-L103  
 SEL AN 14 24  
 L105 2 S E23-E26 AND L104  
 L106 48 S L102, L105, L48, L50 AND L48-L50, L59-L105  
 L107 7 S L106 AND (PLANT OR VEGETA? OR COTTONSEED OR COTTON SEED OR LI

L108 1 S L106 AND METHYL ESTER  
 L109 38 S L106 AND (?POLYOL? OR ?POLY OL OR POLYHYDR? OR POLY HYDR?)  
 L110 41 S L106 AND (?PARTICLE? OR ?PARTICULAT? OR ?GRANUL? OR ?CAPSUL?)  
 L111 48 S L106-L110

FILE 'REGISTRY' ENTERED AT 08:25:29 ON 13 FEB 2008

FILE 'HCAPLUS' ENTERED AT 08:25:29 ON 13 FEB 2008  
 L112 TRA L111 1- RN : 147 TERMS

FILE 'REGISTRY' ENTERED AT 08:25:30 ON 13 FEB 2008

L113 147 SEA L112  
 L114 64 S L113 AND PMS/CI  
 L115 13 S L114 AND N/ELS  
 L116 26 S L114 AND (POLYURETHAN? OR POLYISOCYAN? OR POLYCYAN?) /PCT  
 L117 30 S L115, L116  
 L118 29 S L117 NOT C3H5NO  
 L119 34 S L114 NOT L117  
 L120 13 S L119 AND (C2H4O OR C3H6O)  
 L121 11 S L120 NOT (ETHENOL OR ETHENYLBENZENE)  
 L122 83 S L113 NOT L114-L121  
 L123 1 S L122 AND OC5/ES  
 L124 82 S L122 NOT L123  
 L125 4 S L124 AND (SN OR BA) /ELS  
     SEL RN 1 3  
 L126 2 S L125 NOT E27-E28  
 L127 10 S L124 AND (C12H18N2O2 OR C22H13N3O3 OR C8H12N2O2 OR C4H10O2 OR  
 L128 1 S L124 AND OC2/ES  
 L129 54 S L118, L121, L123, L126, L127, L128  
 L130 55 S L51-L54, L129

FILE 'HCAPLUS' ENTERED AT 08:35:38 ON 13 FEB 2008

L131 43 S L130 AND L111  
 L132 5 S L111 NOT L131  
 L133 3 S L132 NOT (1973:419926 OR 1966:467310) /AN  
 L134 46 S L131, L133

FILE 'HCAPLUS' ENTERED AT 08:37:15 ON 13 FEB 2008

=> => fil reg  
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STRUCTURE FILE UPDATES: 12 FEB 2008 HIGHEST RN 1003006-87-8  
 DICTIONARY FILE UPDATES: 12 FEB 2008 HIGHEST RN 1003006-87-8

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TSCA INFORMATION NOW CURRENT THROUGH June 29, 2007

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REGISTRY includes numerically searchable data for experimental and  
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experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d ide can 153

L53 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN  
 RN 849765-90-8 REGISTRY  
 ED Entered STN: 04 May 2005  
 CN Poly[oxy(methyl-1,2-ethanediyl)],  $\alpha$ -hydro- $\omega$ -hydroxy-, ether  
 with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1), polymer with Isonate  
 143L (9CI) (CA INDEX NAME)  
 MF ((C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>14</sub> O<sub>3</sub> . Unspecified)x  
 CI PMS  
 PCT Manual component, Polyether, Polyurethane, Polyurethane formed  
 SR CA  
 LC STN Files: CA, CAPLUS, USPATFULL

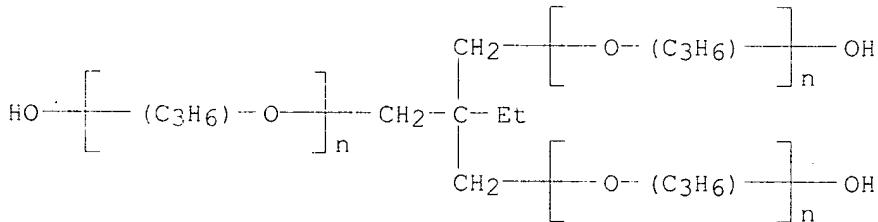
CM 1

CRN 39394-41-7  
 CMF Unspecified  
 CCI MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 25723-16-4  
 CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>14</sub> O<sub>3</sub>  
 CCI IDS, PMS



1 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 142:391676

=> d ide can 152

L52 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2008 ACS on STN  
 RN 39394-41-7 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Isonate 143L (CA INDEX NAME)  
 OTHER NAMES:  
 CN Dow 143L  
 DR 54391-99-0, 39277-71-9  
 ENTE A mixture of 4,4'-diphenylmethane diisocyanate, carbodiimide, and

trifunctional cycloadduct (Upjohn Co.)  
MF Unspecified  
CI COM, MAN  
LC STN Files: AGRICOLA, CA, CAPLUS, CHEMLIST, IFICDB, IFIPAT, IFIUDB,  
PROMT, TOXCENTER, USPAT2, USPATFULL

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

202 REFERENCES IN FILE CA (1907 TO DATE)

125 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

202 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 147:542400

REFERENCE 2: 147:33668

REFERENCE 3: 147:11901

REFERENCE 4: 146:423228

REFERENCE 5: 146:319092

REFERENCE 6: 146:318258

REFERENCE 7: 145:363631

REFERENCE 8: 145:278427

REFERENCE 9: 145:272271

REFERENCE 10: 144:213960

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